

**THE
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.
RAILWAYS ILLUSTRATED • ESTABLISHED 1835 • THE RAILWAY OFFICIAL GAZETTE

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Annual subscription £3 10s. 0d. post free. Single copies, One shilling & sixpence.
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 94]

FRIDAY, MAY 11, 1951

[No. 19

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Steel and Machine Tool Shortages

WITH the growing shortages of raw materials in the steel industry—which earlier this week resulted in an ominous decision to close three steelworks in Wales—it is remarkable that the British Executive so far has not declared the railways to be seriously affected, even although the situation must be causing grave concern. No doubt the Government has strategic considerations in mind in ensuring to British Railways a reasonably high proportion of bare necessities. Even so, departmental officers, such as district engineers (concerned with the state of their track), will have strong views as to what are "bare necessities." Apart from this, however, it would be a hard economic blow if any check had to be exercised in the carriage building or station rebuilding programmes or other steps (such as track re-laying to facilitate higher speeds) in rehabilitation and improvement, which have important commercial as well as strategic implications. In passing, it is fair to say that allegations that the railways have contributed to the raw material shortage by inability to provide wagons are very largely untrue; the shortages of wagons for mineral traffic, of which much has been made by some critics of the railways, have been local and of short duration. The movement of wagons has been another matter. How far the locomotive building and other railway material industries in this country, which play so important a part in its export trade, will be affected by the shortage, is another matter. At this stage

it can only be hoped that the allocation scheme which shortly may come into force will make due provision for the locomotive builders and for the many other suppliers to railways overseas. Another menace both to the railways and to the railway industries has loomed nearer in the increasing shortage of machine tools resulting from rearmament. The situation here is analogous to that in relation to steel generally. The 35 per cent. cut announced in deliveries to "civilian" users in Britain, however, is serious. Against this, the Minister of Supply, specifying motor vehicle manufacturers as those on whom the blow will fall most heavily, has announced the details of his scheme of allocation. It will help if the scheme under consideration for control of steel allocation proves to be as comprehensive.

Checking the Facts

THE extent to which critics of British Railways allow themselves to be misinformed is illustrated in a recent article by Mr. Vincent Evans in the *Daily Express*. Of some ten statements propounded as "facts," three are major statistical errors (as to the amount to be realised by the fare increases now under consideration, coal consumption, and the numbers of porters employed); two are generalisations about "chaos" in operating and "bad tracks"; two are miscalculations (of coal costs, and staff required in relation to traffic—the latter ignoring goods traffic); two are misconceptions (as to porters' duties and to the steps taken since nationalisation to study and to realise staff economies); and a statement on footplate men as passengers shows ignorance of the part played by the Railway Executive in the negotiations on lodging turns. To these assertions Mr. A. J. Pearson, Chief Officer (Administration), the Railway Executive, has replied, stating the facts with studied moderation. "Facts," he states, quoting the late C. P. Scott of *The Manchester Guardian*, "are sacred; comment is free." Whatever the views of critics on a public undertaking such as British Railways—and they are bound to disagree profoundly—there is no excuse for inaccurate factual statements when, as in this case, such ample facilities exist for checking.

British Railways Labour Relations

THERE has been criticism that British Railways are carrying an unnecessarily large staff compared with pe-war years. There have been alterations certainly in working conditions, such as holidays with pay and a shortening of the working week, which have called for 12½ per cent. extra staff, but in fact the total staff employed by British Railways today is 60,000 less than in 1948. Mr. John Benstead, Deputy Chairman, British Transport Commission, who quoted these figures in a lecture before the London School of Economics on May 8, agreed that if public ownership of transport entailed waste of manpower, then it could be said to have failed, but by a reduction in the establishment of British Railways many thousands of workers had been made available for industrial needs. Mr. Benstead, during his lecture, points from which are given elsewhere in this issue, dealt with some of the outstanding problems of today, including the adverse effect of full employment on the recruiting of staff for the railways and the attraction to workers of those industries in which incentive payments can be allied directly to production. He referred also, among other matters, to the development of the machinery for negotiation and consultation, and said that the ideal of "workers control" would result in paralysing delay.

Canadian Pacific Railway

ALTHOUGH railway net earnings of the Canadian Pacific Railway Company in 1950 showed an improvement over the previous four years, they are still less than satisfactory. Mr. W. A. Mather, President, pointed out at the seventieth annual meeting that the need for prompt relief through increased rates to meet increasing

costs, was again urgent. With an annual payroll of more than \$230 million the company is severely affected by the upward movement in wage rates and it is estimated that the establishment of a 40-hour week with 48-hour pay maintained will involve nearly double the cost of the direct wage increase of 7 cents an hour awarded last year. Increased material costs are also causing the company grave concern. Total purchases, almost wholly in Canada, exceeded \$142 million. Application for a 5 per cent. increase in freight rates made last December is still under consideration. On April 23, an amending application was filed asking the Board of Transport Commissioners for an additional general increase of 14 per cent., with exceptions for coal and coke, or, alternatively, an increase of 15 per cent. with additional exceptions on a number of other commodities. A report of the meeting appears in other pages this week.

Progress in Steel Research

LAST year the British Iron & Steel Research Association made useful progress in its investigations of problems ranging from the supply and handling of raw materials through the processes of steel making to those more closely related to the user. Future expansion will require further funds and the 1950 report of the council states that the British Iron & Steel Federation has raised its contribution from £250,000 to £290,000 and has agreed to subscribe up to £300,000 for 1951 and 1952. These amounts will entitle B.I.S.R.A. to a Government grant. An interim report on steel coal wagons showed that the use of low alloy struts should double the life of floor plates, until now made of mild steel, and it is also stated that the plate thickness of the superstructure of all coal and mineral wagons might be reduced, thus giving valuable economy in the dead load. Fundamental investigations into corrosion have been continued at Cambridge University. Surfaces coated with cementiferous paints are being tested under atmospheric and universal conditions. Results obtained so far have shown that, while the chloride type of paint gives good results when immersed in fresh or sea water, relatively poor results are obtained under atmospheric conditions.

Permanent Way Institution Convention

THE annual summer convention of the Permanent Way Institution has always been a very popular event, but an exceptionally large number of members and friends indicated their intention of being present this year, when by arrangement with the Netherlands Railways the convention is being held at The Hague under the Presidency of Lt.-Colonel H. B. Everard from May 18-23. Mr. F. Q. den Hollander, President of the Netherlands Railways, gave an enthusiastic welcome to the suggestion, which was put forward after the annual meeting last year, granted travel facilities over the whole railway system, arranged for buses and boats to be provided, and offered generous hospitality on many of the visits. A varied programme of papers and inspections and sight-seeing tours has been arranged, as is shown in an article in other pages this week. The annual general meeting will be held on May 18, after which Mr. J. L. A. Cuperus, Chief Civil Engineer, Netherlands Railways, will give a lecture, illustrated by lantern slides and films, in which he will describe the civil engineering works carried out on the Netherlands Railways since the war.

Continental Visits by S.R. Debating Society

SINCE its short visit to Dunkirk in 1948, British Railways, Southern Region, Lecture & Debating Society has made an annual tour of railway installations and scenic attractions on the Continent. In 1949 the visit was extended to a long-weekend in France, and last year, which was the Society's twenty-first anniversary, it was decided to make a 12-day tour in France, Switzerland, and Italy. Some 105 members left Victoria Station yesterday, May 10, on this the fourth tour, and will visit Brunnen, Zurich, and Basle in Switzerland. It has become traditional for

members of the Society taking part in these tours to receive a descriptive programme outlining the tour and giving details of places to be visited, and a further edition of this folder has been issued this year. Though, because of the need for paper economy, it has been necessary to curtail the present folder, it is again of a high standard. Apart from setting out the itinerary, the folder, which is produced by Mr. K. W. B. Davies, Honorary Secretary of the Society, contains notes on the geography, history and government of Switzerland, details of the railway system, and a foreword by Mr. C. P. Hopkins, Chief Regional Officer, and President of the Society. A folding plate gives 17 half-tone illustrations of the Swiss Federal Railways and a number of diagrams show signalling arrangements and gradient profiles.

Diverting an American Main Line

THE building of another dam in the United States has again necessitated the diversion of a main line, this time that of the Southern Railway system between Chattanooga and Cincinnati. At Burnside, Kentucky, the original line crossed the Cumberland River on a single-track bridge, which would have been submerged by the reservoir being formed by the building of the Wolf Creek Dam. The realignment crosses the river about a quarter-of-a-mile upstream from the old bridge and is at a level permitting headway for navigation on the reservoir. The new bridge, which carries a double track, is therefore a costly structure, 270 ft. above the river bed and a quarter-of-a-mile long. The diverted line is shorter and is more easily graded and curved than the original. Two tunnels, each over 1,000 ft. long, are eliminated. The new works involved are described elsewhere in this issue.

Wood Burning Locomotives for Benguela Railway

RECENTLY the North British Locomotive Co. Ltd. completed an order for six locomotives for the Benguela Railway. These are designed for the efficient burning of wood fuel and are required for operating passenger services. The locomotive frames are in one continuous length machined from rolled slab, finished to a thickness of 3½ in. and suitably stayed throughout by steel castings. The cylinders are of cast iron and integral with the saddle casting; renewable cast-iron liners are fitted to the cylinders. Walschaerts valve gear actuates 11-in. dia. piston valves and steam-operated reversing gear is provided. The boiler is fitted with a round top radial stayed firebox, with an inner box of copper, incorporating a brick arch supported by three brick arch tubes of 3 in. outside dia. The smokebox is fitted with Kylchap exhaust system and a spark arrester is also fitted. A steam stand has been provided, with the necessary valves for supplying steam to injectors, ejectors, steam reverse, and other equipment. Further details of the locomotives are given elsewhere in other pages this week.

Festal Lights

WHILE it would be an exaggeration to claim that London has abandoned itself to a mood of Continental gaiety, it can be said at least that large crowds now press resolutely towards the turnstiles of the South Bank Exhibition. Already there are signs that the weekly attendances may earn a place in the B.B.C. news bulletins as secure as that once enjoyed by the number of miners at work on Saturdays. The railways in the neighbourhood ably support the efforts of the Festival of Britain authorities by brightening their own premises. Waterloo main-line station presents a floodlit façade and a neon name sign opposite an exhibition entrance, with fluorescent lighting on the approach road alongside. Fluorescent lamps in large numbers at Underground stations impart their characteristic glamour to the previously sober scene. In the shock of contrast with what he had expected, the traveller finds himself stimulated to a mood of courageous optimism like that which seizes characters in the illustrated stories advertising tonic beverages about half-way through the

second line of pictures. It is a light fit for events equally far removed from reality, and as he sweeps proudly down the escalator the traveller scans his evening paper in the expectation of finding an announcement that Monsieur Gromyko has applied for membership of the Primrose League.

Summer Train Services, Western Region

THE Western Region book, first of the British summer timetables to be published, operative from June 18 to September 3, reveals some novelties but practically no acceleration. The principal additions include a restaurant car express to Swansea from Paddington daily at 8.40 a.m., which for the first time misses Newport and stops first at Cardiff, 145.3 miles from London in 162 min. (within 1 min. of the fastest pre-war time). With stops also at Port Talbot and Neath, Swansea is reached at 12.41 p.m. Last summer this relief to the 8.55 a.m. down ran on Saturdays only, but a 9.55 a.m. from Paddington to Pembroke Dock ran daily; this year the 9.55 is to run only on Saturdays. The other relief South Wales expresses, at 3.45 p.m. (Fishguard boat train) to the 3.55 p.m. daily, and at 6.42 p.m. to the 6.55 p.m. down on Fridays only, run as last year, and correspondingly in the up direction.

On the North main line, the 10.10 a.m. from Paddington, which last summer ran on Saturdays only and to Aberystwyth, this year runs daily to Birmingham (12.30 p.m.) and Wolverhampton (12.53 p.m.), with a through portion for Stratford-on-Avon, and assumes the name "William Shakespeare." The Saturdays only "Cambrian Coast Express" for Aberystwyth is moved from 10.10 to 10.50 a.m. out of Paddington, and provided with a restaurant car throughout. On Saturdays also the "Inter-City," at 9 a.m. from Paddington, becomes a through express for Pwllheli, and for the first time on record a restaurant car works through to Barmouth on this train. In the up direction the "William Shakespeare" leaves Birmingham at 7.50 p.m. and reaches Paddington at 10.10 p.m., with through coaches from Stratford-on-Avon. New through coaches to and from Stratford-on-Avon are run on the 9.10 a.m. and 4.10 p.m. from Paddington and on the expresses due in Paddington at 12.25 p.m. and 7.5 p.m. (the "Inter-City").

On the West of England main line the all-sleeping car train from Paddington to Penzance which first was run at the Christmas weekend, 1950, will operate every Saturday up to September 15, from Paddington at 12.20 a.m., due Penzance at 8.35 a.m., and from Penzance at 9.50 p.m., due Paddington at 6 a.m. Sunday mornings. The train is advertised as non-stop between Paddington and Plymouth, and calls at all principal stations in Cornwall. Between Paddington and Bristol the 9.5 a.m. down and 4.15 p.m. up (1.50 p.m. Saturdays) are named "Bristolian," though taking 2 hr. 20 min. for the journey as compared with the pre-war 1½ hr. The 11.15 a.m. from Paddington to Bath, Bristol, and Weston-super-Mare becomes the "Merchant Venturer," returning as the somewhat leisurely 4.35 p.m. from Weston (3 hr. 40 min. from Weston and 2 hr. 50 min. from Bristol to Paddington).

At weekends the number and extent of the advertised non-stop runs will be without precedent. On Saturdays they will include that of the "Cornish Riviera Express" from Paddington to Truro, 279 miles (actually with working stops at Newton Abbot for assistance and at Devonport Junction to change engines); five runs to Plymouth (225½ miles) and two to Brent (209½ miles), with working stops at Newton Abbot for assistance; three to Torquay (199½ miles), two to Newton Abbot (193½ miles), one to Teignmouth (188½ miles), one to Dawlish (185½ miles), and one to Exeter (173½ miles), as well as one from Reading to Plymouth (189½ miles). There are fifteen similar runs in the up direction, with no publicly advertised stops from points as far distant as Bodmin Road (252½ miles), St. Columb Road on the Newquay branch (274½ miles), and Liskeard (243½ miles), ensuring undisturbed journeys for passengers over long distances though actually with working stops for locomotive purposes.

Indian Railways in 1949-50

THE administration report of the Indian Railway Board for the year ended March 31, 1950, announces that gross earnings of all Government Railways touched the highest level until then attained. Excluding the Jodhpur, Nizam's State, Eastern Punjab, Assam and the narrow-gauge sections of the East Indian Railway, new records were set up in passenger and goods earnings, passengers carried, passenger-miles, originating tonnage, ton-miles, and train-miles. Gross earnings for all railways in India totalled Rs. 258.31 crores (£193,732,500), an increase of about 11 per cent. over the corresponding figure for 1948-49. Passenger traffic earnings on all Indian railways increased by 2.3 per cent. and goods earnings by 20.8 per cent. Gross traffic receipts of Government Railways, including suspense, amounted to Rs. 236.35 crores. After meeting all charges, including depreciation and interest, the working surplus was Rs. 14.59 crores (£10,942,500). Out of this surplus Rs. 7.59 crores were credited as an additional contribution to the Depreciation Fund, leaving Rs. 7.0 crores to be handed over to general revenues.

The following are some of the principal statistics for 1948-49 and 1949-50 for all Indian railways:—

	1948-49	1949-50	Percentage variation
Passengers carried (millions) ...	1,184.5*	1,254.5	+ 5.9
Passenger-miles (millions) ...	38,817.2*	40,021.1	+ 3.1
Passenger earnings (crores) ...	93.11*	95.23	+ 2.3
Average passenger journeys (miles) ...	32.8	31.9	- 2.4
Freight tons carried (millions) ...	82.7*	91.6	+ 10.8
Net ton-miles (millions) ...	22,750*	25,461	+ 11.9
Goods earnings (crores) ...	112.31*	135.7	+ 20.8
Average miles a ton of goods was carried	275*	278	+ 1.1

* Revised figures

Operation generally improved during the year. Train-mileage increased by 7.72 per cent., and there was a further appreciable improvement in passenger train punctuality. Net ton-miles per wagon-day rose from 358 to 402 on the broad gauge, and from 171 to 180 on the metre-gauge lines. The percentages of engines under or awaiting repairs fell from 21 to 20 and 19 to 17 on the respective gauges; the numbers in use daily rose by 3.94 and 5.27 per cent., respectively, as compared with 1948-49.

The Assam rail link, providing an all-Indian route between Assam and North Bengal and the rest of India was opened for goods traffic on December 9, 1949, and for passenger traffic on January 26, 1950. Other new lines opened during the year totalled 90 miles, but construction work was in hand on a further 300 miles, including the Kandla-Deesa connection, 170 miles, being undertaken by the Bombay, Baroda & Central India Railway. Owing to financial stringency, it was decided in September, 1949, to postpone work on the proposed bridge over the Ganges at Mokameh, estimated to cost £9 million, for a period of two years. Preliminary work on the locomotive manufactory at Chittaranjan made good progress.

During the year under review, 395 broad- and 17 metre-gauge locomotives were placed in service, and four more metre-gauge engines were ordered. About 600 coaching units were put into traffic, roughly half being of each gauge; 1,444 broad-gauge goods vehicles—in terms of four-wheel units—were placed on the line. A five-year arrangement was entered into with the British Locomotive Manufacturers by which they agreed to give technical aid in the development and operation of the Chittaranjan works. The Government of India, on its side, undertook to place orders with that body for 200 locomotives, spread over the five years, but with a minimum of 40 in any one year. The Tata Locomotive & Engineering Company built 18 boilers during the year.

One of the most interesting features of this report is the ten-page chapter on the Central Standards Office, dealing mainly with research in civil and mechanical engineering. In addition to the 40-ft. and 60-ft. pre-stressed concrete bridge spans constructed and providing a normal service test of the designs on the Assam rail link, a 40-ft. span has been tested under an AWE broad-gauge locomotive with 22.2-ton axle-loads. It was also tested with a derailed wagon loaded to capacity. The design load was exceeded

by 18 per cent. without ill-effects. Upon the results of the test it was decided to use timber cross sleepers instead of the rails being fixed directly to the concrete on such spans.

New standard 80-lb. and 50-lb. rails were designed for 5 ft. 6 in. and metre gauge respectively and subjected to two-dimensional photo-elastic analysis. As a result of the analysis they have been redesigned as 90-lb. and 55-lb. sections, which are to undergo three-dimensional analysis. In order to use ungraded coal including slack, tests with mechanical stokers showed that high rates of firing could be sustained, but losses by carry over of unburnt coal were high and boiler efficiency suffered. A new "honeycomb" grate, designed by the Standards Office, the lightest of several types tested, showed a combustion comparable with the best more expensive proprietary grates. Stress analyses of the first type of light-weight all-steel coach of integral construction showed that several modifications were necessary; these are being embodied in a second type.

There were six major accidents during the year and four of these were derailments caused by the track being tampered with by persons unknown. These cases of sabotage occurred in widely separated areas from northern India to Madras, and were responsible for 22 people being killed and over 200 injured. Of the other two accidents, one was due to derailed wagons being run into by the Kashmir Mail, 69 persons being killed and 81 injured. Volume II has not come to hand.

Remodelling of Polmadie Depot

THE modernisation of Polmadie Depot, Scottish Region, certain features of which was described and illustrated in our September 3, 1948, issue, was dealt with in a paper entitled "Modernisation of a Large Motive Power Depot" read to the Institution of Locomotive Engineers on February 21, by Mr. R. F. Harvey, Vice-President of the Institution, and Chief Officer (Motive Power), Railway Executive. Mr. Harvey said that Polmadie provided a great deal of locomotive power for passenger working from Glasgow Central, including Anglo-Scottish expresses, for freight working to Carlisle, and for local services. Before the formation of the four main-line railways on January 1, 1923, there was also a smaller depot at Eglinton Street, which was subsequently closed for other than coaling, watering, and ash facilities for servicing locomotives employed on local working, an arrangement which relieved Glasgow Central passenger station; the shed buildings were taken over for the maintenance of motor vehicles.

The present shed at Polmadie was built in 1924 and the layout of the locomotive yard was not in keeping with modern practice, while the disposal sequence of operations also left much to be desired. In June, 1940, with the introduction of the standard arrangement of the L.M.S.R. to form locomotive districts, Polmadie became the parent depot, and supplied power to the district, and also dealt with the repair and examination of its own locomotives, and locomotives from the smaller depots, the repairs to which could not be completed within 48 hr. To meet the heavy demands for locomotive power it was decided, in 1941, to modernise Polmadie Depot. There was, Mr. Harvey said, very heavy wartime traffic both to and from the west coast of Scotland. The locomotive building programme had to be curtailed, and it was increasingly necessary to improve locomotive availability.

The original layout covered an area of nine acres, compared with 15 acres for the new layout, which provided for a complete re-arrangement of the yard together with the installation of new coaling plant, ash disposal, and watering facilities, all of which were re-sited in what was, under the old layout, the Shawfield yard traffic sidings, most of which were given up because of changed traffic conditions, one of them the discontinuance of sectionising private owner wagons. Preparation pits of precast concrete sections are provided on the 14 roads outside the shed, and the surrounding area paved; fluorescent lighting is sunk into the pit walls. Three coaling roads were included in the new layout, the individual coal hoppers each handling different grades of coal required for various

services; cross feed is arranged between two of the hoppers and water spraying facilities are provided.

The ashplant disposal is of the submerged belt type delivering into an overhead bunker, and comprises four ashpits, each 190 ft. long. There are two submerged belt installations, one between each pair of pits, discharging on to a belt conveyor across the pits, which in turn delivers ashes to the rising belt conveyor and thence to the overhead bunker. The ash hopper straddles the track and discharges into wagons; facilities are provided for slathing ashes.

Remodelling of the existing signal arrangements was also necessary and the number of levers was increased from 64 to 84. Regarding financial justification, Mr. Harvey said that the scheme involved an expenditure of £181,681, the total savings visualised being £25,336, which, after allowing for interest on capital and increased annual expenditure, showed a saving of 13.9 per cent.

British Transport Commission Traffic Receipts

THE incidence of Easter during the fourth statistical period (to April 22) of 1950 is largely responsible for the 20 per cent. drop in British Railways passenger receipts for this as compared with last year; the aggregate for the year nevertheless shows a fall of nearly 6 per cent for this item. Merchandise receipts for Period 4 were up by 25 per cent., minerals by 17, and coal and coke by 33 per cent. over 1950. These must, however, be considered in the light of the rate increases, of 16½ and 10 per cent. respectively, effective from May 15 to April 16 last; even so, this represents a real increase in coal traffic, though the slight apparent increase in merchandise receipts may be due to the incidence of Easter. British Railways aggregate receipts for the year to date are only 10 per cent. up on 1950, largely because of the 22 per cent. rise in coal traffic—the only rail traffic to show any increase. Figures now available for Period 3 show that for mineral traffic, revenue-earning tonnage fell by 4.5 and net ton-miles by 2.6 compared with 1950, resulting in a 7 per cent. rise (taking into consideration the one rate increase of May, 1950) in receipts; the 17 per cent. rise in mineral receipts for Period 4 would seem to imply some increase in this traffic over the preceding period, even allowing for Easter.

	Four weeks to April 22		Incr. or decr.	Aggregate for sixteen weeks		Incr. or decr.
	1951	1950		1951	1950	
—	£000	£000		£000	£000	
British Railways						
Passengers	6,825	8,490	-1,665	25,757	27,359	-1,602
Parcels, etc., by passenger train	2,456	2,170	+286	9,568	8,552	+1,016
Merchandise & livestock	7,389	5,917	+1,472	28,821	25,300	+3,521
Minerals	2,653	2,259	+394	10,522	9,368	+1,154
Coal & coke	6,908	5,187	+1,721	26,920	21,996	+4,924
	26,231	24,023	+2,208	101,588	92,575	+9,013
Road Passenger Transport:						
Provincial & Scottish—						
Buses, coaches & trolley-buses	3,016	2,764	+252	11,103	10,078	+1,025
London Transport						
Railways	1,224	1,099	+125	4,823	4,431	+392
Buses & coaches	2,506	2,354	+152	9,517	9,191	+326
Trolleybuses & Trams	762	817	-55	2,971	3,242	-271
	4,492	4,270	+222	17,311	16,864	+447
Inland Waterways						
Tolls	67	53	+14	251	206	+45
Freight charges, etc.	68	61	+7	252	252	nil
	135	114	+21	503	458	+45
Total	33,874	31,171	+2,703	130,505	119,975	+10,530

Provincial and Scottish bus receipts for Period 4 were 9 per cent. over last year, and 10 per cent. for the aggregate. The 18 per cent. rise in inland waterways traffic for Period 4 is also affected by the two rate increases referred to above. The increases in London Transport railway receipts of 11 per cent. for the period and 9 per cent.

for the aggregate, are affected by the application of the London Charges Scheme from October, 1950, and also by the incidence of Easter; the same applies to the increases, of 6.4 and 3.5 per cent. respectively, in bus receipts. London Transport total receipts increased by 5 per cent. over last year for Period 4, and by about half that amount for the year to date.

PERCENTAGE VARIATION 1951 COMPARED WITH 1950

	4 weeks to April 22	16 weeks to April 22
British Railways —		
Passengers	+ 19.6	+ 5.8
Parcels	+ 13.1	+ 11.8
Merchandise & livestock	+ 24.8	+ 13.9
Minerals	+ 17.4	+ 12.3
Coal & coke	+ 33.1	+ 22.3
Total	+ 9.1	+ 9.7
Road Passenger Transport		
London Transport —		
Railways	+ 11.3	+ 8.8
Buses & coaches	+ 6.4	+ 3.5
Trolleybuses & trams	+ 6.7	+ 8.3
Total	+ 5.2	+ 2.6
Inland Waterways		
Aggregate	+ 18.4	+ 9.8
Aggregate	+ 8.6	+ 8.7

New South Wales Government Railways

THE report for the year ended June 30, 1950, by the New South Wales Commissioner for Railways, Mr. G. C. Garside, shows that earnings attained a new record figure, £40,121,758, or £458,297 more than the corresponding figure for 1948-49. The figure would undoubtedly have been much higher but for the coal strike in July and August, 1949, the disastrous floods during three different periods of the year, and inadequate supplies of coal. Compensation for losses in revenue and enhanced working expenses resulting from the strike was made by the Government Treasury in crediting the Railways Department with a sum of £3,000,000. As a contribution towards refunding losses in working country developmental lines a further grant of £800,000 was made.

Working expenses totalled £39,280,576, £3,541,743 more than for the previous year, as a result of increases in wages, costs of materials and operating, and also of overtime payments necessitated by shortage of staff. Operating profit was, therefore, £841,182. Overdue increases in charges were at last met by Government sanction to increases of 16½ per cent. in freight rates and 25 per cent. in parcels rates as from October 16, 1950, and 12½ per cent. in fares as from November 1 of that year, too late to affect the year under review; they are expected to yield £9,745,000 additional revenue annually. Capital expenditure on lines open for traffic stood at £181,723,947 and interest and other relative charges totalled £5,994,656. Net deficit after providing for statutory debits was £2,494,605.

The following are the principal statistics for the year:—

	1948-49	1949-50
Total miles open for traffic	6,112½	6,112½
Earnings	£39,663,461	£40,121,758
Working expenses	£35,738,833	£39,280,576
Balance	£3,924,628	£841,182
Percentage of profit to capital invested	£2 6s. 5d.	9s. 6d.
Percentage of working expenses to earnings	90.11	97.90
Earnings per average mile open	£6,479	£6,564
Working expenses per average mile open	£5,838	£6,426
Return per average mile open	£641	£138
Passenger-journeys	263,116,462	258,182,826
Goods tonnage	16,903,172	15,890,467

The general coal strike lasted from June 27 to August 15, 1949, and caused the most drastic train service reductions ever forced on the Department. By the middle of July the Melbourne and Brisbane expresses and North Coast mail were running only twice weekly in each direction, 51 country branches were closed to goods traffic, and Sydney electric services were curtailed. This continued until August 6 when restoration of services began. The floods and washaways in three different periods of the year caused the worst damage ever recorded in many districts, and at least one important bridge and many embankments were washed away and several landslides occurred.

Shortage of locomotive power was acute, but during 1949-50 only six two-car diesel rail motor trains, two "C38" and two "D58" locomotives were turned out of railway shops. There were on order on June 30, 1950, however, 25 Beyer-Garratt locomotives, 10 sets of equipment for diesel-electric locomotives, and 10 diesel-electric shunting engines from Beyer-Peacock, English Electric, and Australian General Electric, respectively. Subsequently, a further 25 Beyer-Garratt locomotives were ordered and 40 electric locomotives were tendered for. Eight air-conditioned corridor and three buffet cars were built in railway workshops and 1,590 wagon underframes of various types and 900 complete goods vehicles were delivered by contractors. Two eight-car and two seven-car air-conditioned steam train sets, and six two-car diesel rail-motor trains were placed in service. Though oil fuel costs are four times that of coal, 54 additional standard goods engines were converted from coal burning.

Work continued on the construction of the St. James-Wynyard suburban electric link, and on the driving of the twin tunnels in the Sydney Domain on the Eastern Suburbs line; a number of preliminary works on various other suburban sections was also in hand. Moreover, progress was made in the doubling and deviation of the main Northern line and on the Lidcombe-Penrith quadrupling. Other improvement works included a new power house and equipment at White Bay power station.

Planning and Transport in Partnership

RAILWAYS, like other forms of human activity, must adapt themselves to meet changing conditions. Branches or small stations, when their traffic has dwindled or gone, may be closed, but with this removal of the "dead wood" must go fresh growth in other places if the trunk system is to remain healthy. This point is brought out in a survey entitled "Railways and Planning Today," by Mr. M. R. Bonavia, Principal Works & Development Officer, British Transport Commission, in the May issue of *Town & Country Planning*, who also makes it clear that most new railway construction in this country in progress or planned is mainly to serve the needs of industry.

The satellite towns now under construction or to be built in the Home Counties pose new transport problems. As Lord Latham, Chairman of the London Transport Executive, has pointed out in an address on which we commented in our April 20 issue, the railways are bound by the Transport Act to provide efficient facilities, to them as to any other community. The ideal satellite town would have no transport problems; it would be self-contained and its inhabitants would not need to go outside it for work or recreation. But the human element enters in in practice: although the chief wage earner of a family may work within the town, other members of it may seek their employment outside, and all may wish to travel to town or elsewhere for pleasure. Furthermore, the new towns will need extra goods services and facilities, both while they are under construction, and after, to serve their light industries and provide them with necessities.

In 1946, London Transport and the main-line companies were asked to consider the transport needs of the new towns. Taking Stevenage as an example, it was estimated that travel to and from London would average thirty rides a head annually. This, added to the extra traffic resulting from the planned increase of population along the line, meant some 9,000 extra journeys—or 17 more trains—a day out of Kings Cross. Electrification and the removal of the existing double-track bottlenecks at Hadley Wood and Welwyn would be required.

It has been suggested that some of the new towns might have been sited on less heavily-trafficked lines, thus spreading the extra traffic more evenly over the whole London railway network. By placing them, however—as has been mostly done—on or near trunk routes which are quadrupled for some distance from London, the traffic can be "canalised" on main lines of already ample capacity which it is economically justifiable to electrify, and re-signal, if necessary.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Timetable Complication

April 20

SIR,—I observe in your issue of today a letter from Mr. E. E. Smith, which apparently refers to my letter, dated March 6.

I quite agree with him that the introduction of the 24-hour clock on British Railways would solve the problem, and at the same time "bring us in line," should I say, with the rest of the European Railway system. It is, as he says, completely foolproof, understandable by anyone with average intelligence, but in my first letter I hesitated to refer to the 24-hour clock, because, for some obscure reason, English railways appear always to have possessed a rooted objection to it. Possibly this is because it would involve so many other things in the general way of life as well, such as ordinary transport, broadcasting, and of course domestic and business affairs.

On reflection it seems amazing that we have "bypassed" such an added advantage as a 24-hour clock, when in almost the same breath, shall we say, we alter the clock and put it forward one or even two hours in the summer to give ourselves an extra hour of daylight, when by getting up one hour earlier in the morning we can achieve the same object!

Yours faithfully,
H. W. FRANKLIN

Radwell, Felmersham, Beds.

The Legibility of Station Names

May 2

SIR,—With reference to your correspondent's interesting and well-thought-out article on the above subject in your issue of April 20, the considerations he has mentioned are identical with those borne in mind by this Executive when standards for British Railways station name and direction signs were formulated in 1948. Considerable work has been done in the last two years, but material, labour and costs make the conversion a long-term task.

While your contributor deals with station name signs, there are many other signs at stations, directing passengers to ticket offices, exits, refreshment rooms, etc., all of which need to be reviewed when the name signs themselves are under consideration. At a small two-platform station there are usually about 50 signs of all kinds and, with about 6,000 stations to consider, the aggregate number of signs becomes very great. Admittedly, stations in certain areas are better equipped than others, and we do not propose to scrap something already good and serviceable for something better simply to conform to standard. First consideration is being given, in conjunction with our station renovation programmes, to the more urgent cases.

As to the new standards, the signs themselves consist of vitreous enamelled iron plates, a material which is extremely durable and which requires practically no maintenance other than occasional washing. Large name signs are being installed at the incoming end of each platform, using lettering 12 in. high at all the more important stations—or even larger at certain junction stations—and 8 in. high at small stations. The type used is Gill Sans, an open clear type free of ornamentation and easily legible from a distance. "Repeater" names in lettering 3 in. high are spaced throughout the length of platforms, attached to or near the lighting fittings. These "repeater" signs are arranged at such intervals and heights as will ensure that at least one sign can be seen and read comfortably from any point on the near side of a train standing at the platform.

British Railways attach the utmost importance to the illumination of signs, and where electric lighting is available independent lighting of the large name signs is a feature of modernisation. The effectiveness of name signs sited either on the lineside approaching a station, or on the

ends of station canopies, depends on individual circumstances. It is therefore impossible to standardise the use of such sites, but in the former case we have made provision that where the depth of land permits, large lineside signs can be erected within five miles of principal towns indicating the distance to the station. In a few cases station canopies are used; these can be of value where the approach is on a curve, but for obvious reasons we do not expect nor encourage passengers to lean out of windows to see where they are.

I trust these notes will re-assure your correspondent that British Railways are taking a lively interest in the presentation of station names and signs, and that the results of the thought and care which is being put into this important task will become increasingly apparent to the travelling public as modernisation proceeds.

Yours faithfully,
D. S. M. BARRIE,
Public Relations Officer

The Railway Executive, 222, Marylebone Road, N.W.1

Joint Consultation in Industry

April 30

SIR,—In recent years there has been an increasing acceptance of the principles of joint consultation in almost every sphere of British industry, as is shown by the widespread establishment of joint production committees, works councils, and similar bodies.

I am engaged in research into the scope and methods of joint consultation at the factory level, and in view of the public interest which this subject has aroused, I feel that some of your readers might make a valuable contribution to my work from their own practical knowledge and experience in this field. I would be very grateful to receive details of any scheme of joint consultation in operation in any type or size of industrial establishment; such information would be used solely for academic purposes, and would of course be regarded as strictly confidential.

Yours faithfully,
JOHN REDFERN,
Research Assistant

University of Edinburgh,
Department of Commerce,
High School Yards, Infirmary Street,
Edinburgh, 1

Higher Passenger Fares

April 28

SIR,—In the editorial article in your April 20 issue regarding the new Passenger Charges Scheme, 1951, you remark on a certain "failure to administer jam with the powder."

A golden opportunity to administer jam, with advantage to British Railways finances as well, is being thrown away in the intention to retain unaltered the present high single fare of 2-44d. per mile on the lines in the London area. The scheme introduced last October had one excellent feature at least in that it gave single fares on the L.T.S. line which are the same as London Transport train and bus fares, and it was logical to hope that the present scheme would have extended this principle to all British Railways London lines.

Public travel habits in a great and complex area like Greater London do not always permit neat return journeys to starting point by the same route, which must be done to qualify for the rail day return ticket. Consequently there is a great single journey traffic lost to bus and London Transport rail lines which could well be carried by British Railways with equalised single fares, but they will continue to lose it if their fares remain almost 1d. per mile over the (increased) London Transport fares. If anyone doubts my point let him take a ride on the

electrified North London line of the L.M.R. during the quiet hours of the day. The trains are almost deserted despite a good regular-interval service.

Can we hear the argument against equal single fares, if a case exists? Is it fear of long-distance single journey passengers travelling by slow trains and re-booking at perimeter stations of the London area? This is most unlikely to occur to an extent sufficient to offset the extra traffic that could be won to rail.

Yours faithfully,

R. H. DEWHURST

1, Avenue Gardens, W.3

Seating Arrangements in British Coaches

May 1

SIR,—While I am very pleased to see that the new standard dining cars (types H and K) as described in your March 16 issue, have movable chairs, I am disappointed that British Railways are perpetuating their archaic designs in types G and J which have fixed seats. The latter will be used either as dining cars or as ordinary corridor stock.

It seems to me that, in designing new standard stock, a great opportunity has been missed by not providing more comfortable and convenient seating arrangements in open stock. I have in mind the modern day coaches used in America. These have revolving seats with adjustable backs and footrests and, for third class travel, are far more comfortable than any stock, open or compartment, owned by British Railways.

It would appear that cost of construction has nothing to do with the matter because, presumably, the more comfortable type of seating would not cost any more in open stock (the actual seats might be more expensive but their installation would be less) and, as compared with compartment stock, the cost would be considerably less. Also, with the American type of seating, there would be a substantial saving in weight.

Actually there is very little to be said in favour of compartment stock for long-distance runs (two hours or more) and I am confident that the majority of the travelling public would prefer the modern style. Perhaps some knowledgeable member of the Railway Executive will inform us why such modern designs have not been used for some of the new standard coaches?

Yours faithfully,

G. RICHARD PARKES

School Lane, Formby, Liverpool

Timetables and Train Running

April 30

SIR,—On reading Mr. Latham's letter in your April 27 issue one wonders whether he is getting mixed up between Black Staniers and "red herrings." I have heard many reasons suggested why punctuality is bad on the London Midland Region, but this is a new one.

Mr. Latham says that because of an odd locomotive policy a large number of Class "5" locomotives has to be rostered for fast heavy expresses, and this causes late running. This is an easy proposition to test. Normally none of the expresses on the ex-L.N.W.R. main line south of Crewe is hauled by Class "5" locomotives (except a few light semi-local trains), whereas many expresses on the ex-Midland and most trains on the ex-L.Y.R. and in Scotland are handled by them. According to your correspondent, therefore, the West Coast line should be free of delay, but in practice it is probably the worst section on the L.M.R. for late running, whereas published figures for the Scottish Region, which depends largely on these locomotives, show a good standard of timekeeping. One could cite excellent or appalling individual runs with Class "5" locomotives (as with any other class these days), but the general standard of running of these engines does not seem to be any worse than that of the "Jubilees."

Mr. Bulleid's policy of Pacifics for every train is grossly extravagant. It seems to suit the needs of the Southern Region which has only a moderately-sized locomotive stock

and a light freight traffic, but if it had been applied to the replacement of the L.M.S. locomotive stock in the 1930s it would soon have driven that company bankrupt. Most of the Class "5" spend a good deal of their time on freight work in charge of less experienced crews, and I do not think that a class of 800 "West Countrys" which had had the sort of treatment the average Class "5" gets would be in a fit condition to work express traffic at all by now.

Yours faithfully,

D. J. O. FERRY

70, Grange Gardens, Pinner

British Modern Lightweight Coaches for Indian Railways

May 7

SIR,—With reference to your correspondent, Mr. M. H. Levie's, letter in your May 4 issue on the above subject, as Mr. Levie has pointed out, this phrase should have read "insulated against electrolytic action."

Yours faithfully,

H. GREEN.

Special Director & Chief Engineer (Designs)

Metropolitan-Cammell Carriage & Wagon Co. Ltd.,
Saltley, Birmingham, 8

British Railways Lettering

April 30

SIR,—Mr. R. Barnard Way, in your April 27 issue, objects to the standard Gill Sans serif lettering of the railways apparently on two counts: (i) that its adoption has extinguished initiative and craftsmanship, and (ii) that the lettering "has only legibility to claim for itself."

On the second point, few people would agree that legibility is of only minor importance; after all, the main thing with lettering is that it should be able to be read. Also, legibility is not its only recommendation; Gill Sans is a beautiful type which is pleasant to look at. This is not the case with the old shaded lettering such as was used on, for example, the G.W.R. That lettering was neither legible nor beautiful, and the only words which could be said for it would be a few mild expletives.

On the first point, far from extinguishing initiative, it is good to see British Railways showing initiative by sweeping away all the illegible, ill-designed lettering. In doing so they have merely substituted the work of one good craftsman, the late Sir Eric Gill, for the work of a number of mediocre ones.

Yours faithfully,

R. A. COOPER

10, Queen Anne's Gardens, W.4

May 3

SIR,—The letter by Mr. Barnard Way on page 462 of your April 27 issue prompted me to reply at once in defence of Gill Sans.

I am sure that Sir Eric Gill would have been most concerned to have heard his beautifully designed type referred to as "machine made," particularly as he was one of the leading disciples of the hand craftsmanship movement. One of his aims in life was to fight the machine complex.

Quite apart from this, however, the standardisation of lettering such as carried out by London Transport serves the purpose of utility through its extreme legibility and beauty through the dignified construction of each separate letter. The "handsome shaded letters" that Mr. Way refers to were, I fear, a typical example of Victorian bad taste, a relic of the days when just everything had to be decorated, from the columns of Crystal Palace to the cast iron grapes on the bedroom fireplace.

Type standardisation? I am all for it, but would prefer a different style of type to be standardised for each Region of the railway, for I certainly do not seek for nation-wide monotony!

Yours faithfully,

NIGEL A. RAINBOW

Rathbone Publicity Limited, Gresse Street, W.1

THE SCRAP HEAP

Dining Car Glamour Girls?

The airway companies have seen the publicity value of employing charming girl hostesses and the press gives much publicity to these "glamour girls of the air." Why do not British Railways follow this example? How pleasant it would be to have meals served in the dining car by a blonde in a well-tailored uniform.—*From a letter to "The Star."*

Railway Station Gardens

Flower beds and gardens at country stations, and hanging baskets of flowers at termini and busy junctions, will brighten the outlook of travellers on the Western Region of British Railways during the coming months. Entries are now being invited for the 1951 competition which does much to encourage railway gardeners to improve the appearance of stations all along the line.

Last year no fewer than 382 stations entered this competition and 250 obtained prizes.

C.P.R. Anniversary

The contract for the construction of our line (the Canadian Pacific) was signed between the Canadian Government and the original syndicate on October 21, 1880. It was ratified on February 15, 1881, and then taken over by the Canadian Pacific Railway Company, incorporated on the following day.

The contract was for the line to be completed within ten years—namely, by May 1, 1891. The first sod was turned on May 2, 1881, the prairie section finished on August 18, 1883, the Great Lakes section finished on May 16, 1885, and the last spike was driven on November 7, 1885 at a little place

in British Columbia now called Craigellachie. The first through train, Montreal to the Pacific Coast, left on June 18, 1886.—*From a letter to "The Manchester Guardian" by Mr. C. W. Stokes, Public Relations Officer of the Canadian Pacific Railway, London.*

Riding Down from Bangor

Travellers by the old Belfast & County Down Railway line to Bangor are sometimes regretful that the company in its heyday did not electrify the line and put on a frequent service of trains something like those which serve the outskirts of London so efficiently and operate on its underground routes. If they had, the 'buses might not have got the grip on the traffic that they did between the wars.

The U.T.A. new diesel car is the next best thing, and I am told that it makes very comfortable travelling and is sure to be popular. Passengers compete to get the rear seat, with its wide window, through which one can see the track rushing away behind.

There is something fascinating in watching the shining rails drawing together in the distance, and to older travellers it recalls boyhood longings to be an engine driver.—*From the "Belfast News-Letter."*

A Bolt from the Blue

(British Railways express passenger locomotives are to be painted green, instead of blue)

In locomotive circles
Like wildfire spread the news
About the latest *tour de force*,
The scrapping of the "Blues."
The loco chiefs had reckoned
Their troubles all were through,
But now they're disillusioned, for
It seems that blue won't do.

There's murmuring at Derby,
There's muttering at Crewe,
At Doncaster and Darlington,
Across the Border, too;
But there are smiles at Swindon
And Eastleigh's all serene,
They don't mind swapping back again
From royal blue to green.

"Spotters" will be indignant
And many veterans, too,
Will natter in their beards about
This bolting from the blue;
But seasoned railway stoics
Will suffer with good grace,
They know it's no use feeling blue
About this change of face.

Forward the sprays and paint pots!
On with the change of hue!
But, don't forget, our neighbours
May press their point of view
And, quaintly quoting Crummie
And the dark Rosaleen,
Insist upon their title to
The wearin' of the green.

A. B.

Lions at Waterloo



Station façade and British Railways symbol at Waterloo with G.E.C. floodlighting and Claudgen neon name sign. The "Festival Lion" overlooking an entrance to the South Bank Exhibition, is seen in the foreground

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

Rimutaka Tunnel Contract Let

As recorded in our May 4 issue, the American firm of Morrison-Knudson Limited is to construct the $\frac{5}{2}$ -mile Rimutaka tunnel on the Wellington-Wairarapa line. Preliminary work on the tunnel is almost completed by the Ministry of Works. Sixteen chains have been lined with concrete. Tunnellers have reached the rock face at the western portal. At the eastern portal at Pigeon Bush the rock face was reached immediately and has been penetrated for more than 200 ft. The main task is now ready for the contractor. Installations and buildings are being completed at both ends of the tunnel in readiness for the arrival of the full-scale plant. Accommodation and amenities at the western portal are being extended.

Overseas engineers who recently visited the tunnel for tendering purposes said that it was the first time that they had been asked to tender for the main drive only, with all the preliminary work done.

The contract price for the scheme has been announced as £2,295,000.

VICTORIA

Railway Girls' Choir

The railways' weekly broadcast programme "Nine P.M. Special," from one of the most popular commercial radio stations in Melbourne, has come to an end, and has been followed by a new type of programme, the Railway Girls' Choir. The inspiration for the programme came from the British Luton Girls' Choir.

After selecting the girls from the existing Railways Institute mixed choir,

Mr. Leslie Curnow, the conductor, cabled to London and New York for specially arranged popular, semi-classical, and ballad music. It was decided to begin with 35 voices. A large organ accompanies the choir.

SOUTH AFRICA

Financial

The operation of the railways and other subsidiary services during January, 1951, resulted in a surplus of £1,207,534, bringing the surplus for the ten months ended January 31 to £7,291,918, as against a deficit for the corresponding period of the previous year of £2,320,083.

For January, 1951, the railways showed a surplus of £1,066,660 and a ten months' accumulated surplus of £6,067,570. The harbours had a surplus of £346,864 for this month and an accumulated surplus of £2,551,832. For the period April, 1950, to January, 1951, the total revenue from all services amounted to £92,694,310 and the expenditure to £84,177,556. Net revenue appropriations for this period amount to £1,224,836, leaving the accumulated surplus at £7,291,918.

CANADA

Newfoundland Services

Mr. Donald Gordon, the President of the C.N.R., has told the House of Commons railways and shipping committee that Newfoundland services produced a \$3,000,000 deficit for the Canadian National Railways during 1950.

The deficit for last year—the first full year in which the C.N.R. operated the service for the Federal Government—would have been \$4,250,000 had it not

been for a subsidy of \$1,250,000 on the coastal steamship operations.

In reply to a criticism, he said that the service already showed a marked improvement over what the C.N.R. inherited. With further contemplated expenditures, it left Newfoundland "no legitimate or valid reason for complaints." In 1951 the C.N.R.'s spending budget for Newfoundland district will be "much greater" relatively than for any other part of the system. Mr. Gordon estimated that freight-rate reductions for Newfoundland ordered by the Board of Transport Commissioners last year will cost the C.N.R. about \$768,000 a year.

DENMARK

Main-Line Electrification

Professor P. H. Bendtsen has recommended that all the State Railways main lines should be electrified. He points out that this would lead to a yearly saving on the railways of possibly Kr. 40,000,000, of which most would be fuel. Consequently most of the reduction in expenses would be saving of foreign currency. Professor Bendtsen considers that the electrification should be on the 16,000-volts a.c. system and estimates that the first cost would be some Kr. 350,000,000. He points out that present stock of steam engines is old—the average age is 42 years—and many of them have to be replaced within a few years, thus reducing the cost of electrification.

The State Railways have also considered the problem, but as opinions are divided, the General Manager has now asked the Academy for Technical Sciences to investigate and report.

JUGOSLAVIA

New Railways Opened

On April 28, a 10-mile line between Modrica and Gradacac, in northern Bosnia, was placed in service. Modrica is on the new standard-gauge main line from Bosanski Samac in the north to Sarajevo, about 11 miles south-west of Bosanski Samac. The line has been built to facilitate the transport of fruit from the Gradacac area. There is a scheme to extend it from Gradacac eastwards as far as Bukvik Station, or, alternatively, Spionica Station, both on the Vinkovci - Breko - Banovici standard-gauge line.

On May 1, the eight-mile line between Sabac and Bogatic, in north-west Serbia, was opened. Sabac, on the Sava river, is 20½ miles south of Ruma, on the Belgrade-Zagreb main line.

The third line opened is between Markovac and Despotovac in central Serbia. It is 23½ miles long, and it is intended mainly for the transport of brown coal.

These three lines are part of a programme for the completion of ten lines totalling 248 miles this year.



Mr. Leslie Curnow, conductor, rehearsing the Victorian Railway Girls' Choir

Passenger Locomotives for Benguela Railway

Designed for burning wood fuel and equipped with steam reversing gear

AMONG the orders recently completed at the Hyde Park works of the North British Locomotive Co. Ltd., is one for six 4-8-2 Class "11" locomotives for the Benguela Railway. The design and inspection of the locomotives came under the supervision of the Consulting Engineers, Messrs. Freeman, Fox & Partners. The engines and tenders were designed for burning wood fuel of a calorific value of 7,600 B.T.U.s. per lb. and were shipped in the fully erected condition to Lobito, Angola. The locomotives, built for 3 ft. 6 in. gauge, are required for hauling passenger trains of 500 tons up gradients of 1 in 80, and for negotiating a curve of 300 ft. radius. The maximum axleload in full working order does not exceed 13 tons.

Boiler Design

The boiler barrel has three rings: the external dia. is 5 ft. 1½ in. at the front and 5 ft. 4½ in. at the rear. The distance between tubeplates is 19 ft. 3 in. There are 76 small tubes of 2½ in. outside dia. and 26 superheater flue tubes of 5½ in. outside dia. Adequate

washout facilities are provided and a manhole is fitted on the bottom of the second barrel ring.

The round top radial stayed firebox has an inner box of copper and incorporates a brick arch supported by three water tubes of 3 in. outside dia. The roof stays are of Longstrand steel, including four rows of flexible stays at the front to allow for expansion, the rigid waterspace stays are of copper while the flexible stays in the breaking zones are of Longstrand steel.

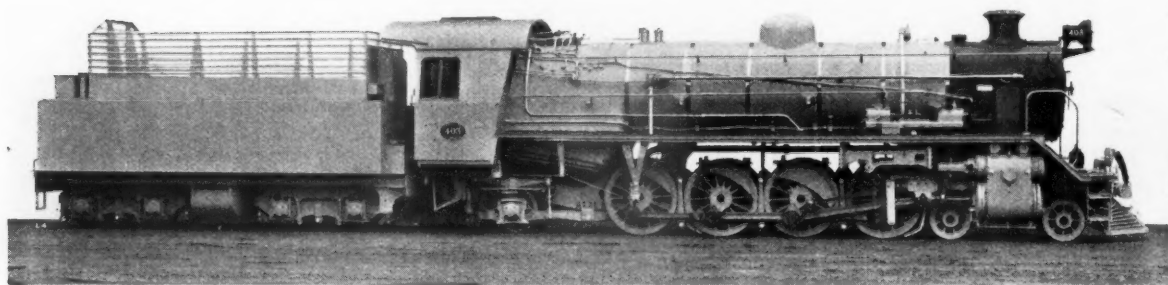
The smokebox is fitted with the Kylchap exhaust system and provision is made for counter pressure steam inlets at the bottom of the blast pipe. An efficient spark arrester is provided and the main steam pipes are made from solid drawn steel tubes with lens joints arranged in accessible positions. The superheater is a standard MLS type with 26 elements, 1½ in. outside dia. and it incorporates on the header a Gresley anti-vacuum valve. A Foster pyrometer is also provided. The regulator in the dome is operated by gearing on the right hand side of the cab.

The firegrate is designed for the effi-

cient burning of wood fuel, and a drop section is provided at the front end. The ashpan is of the single hopper type, with bottom sliding door operated from the footplate. A drench system is also fitted. An Ajax steam operated type D firedoor is fitted with Auld type 1.3 patent steam reducing valve. Firehole protector and deflector plates are provided.

The boiler and firebox shell is lagged with asbestos mattresses and fitted with crinoline hoops on which mild-steel clothing sheets are secured by stainless-steel bands. The cylinders are also covered with asbestos mattresses and mild-steel sheets. The handrails are stainless-steel tubes supported by pillars screwed into sockets studded to the sides of the boiler.

The general steam fittings include a Gresham & Craven No. 12 S.A. injector, one Davies & Metcalfe No. 11 Class J. exhaust steam injector, two 3½ in. Ross muffled pop safety valves, one 1½ in. Everlasting blow-off cock, and two sets of Reflex water gauges. The main steam stand, situated on top of the firebox outside the cab, is fitted with a main



"Class II" locomotive for the Benguela Railway designed for burning wood fuel

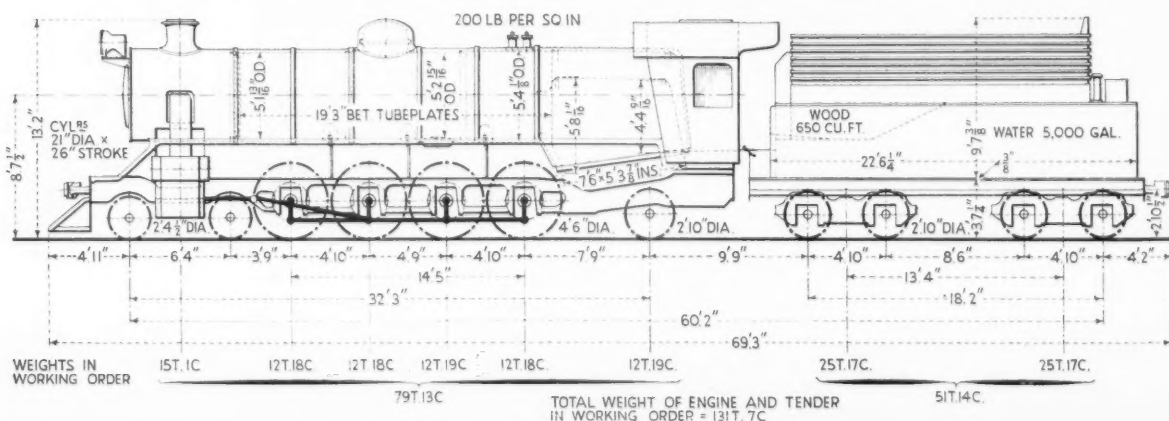


Diagram of principal weights and dimensions of the locomotive

stop valve and all necessary auxiliary steam valves, with the exception of the boiler pressure gauge.

Engine and Tender Design

The main frames, in one continuous length, are machined from rolled s.ab. finished to a thickness of $3\frac{1}{4}$ in., and suitably stayed throughout by steel castings. Coupled axleboxes are of solid bronze equipped with Ajax grease lubricators and grease blocks. The axlebox guides and wedges are lubricated by oil from reservoirs cast in the axlebox crowns, and grease lubrication is provided for the hub faces of the coupled wheels.

Laminated bearing springs are fitted throughout. The coupled springs are of the overhung type and compensation is arranged between leading, coupled and trailing truck wheels. Compensating beams and spring links are fitted with bronze bushes and the pins are lubricated by soft grease.

Henricot automatic couplers are provided at the front of the engine and rear of tender and the tender coupler has Spencer-Moulton I.R. spring draft gear. Coupler centralising gear is also provided and an emergency draw hook and shackle is fitted at the front end of the engine. The intermediate drawbar is equipped with a coil spring at the tender end and safety links are fitted between engine and tender. A cow-catcher is fitted at the front of the engine.

The cylinders are of cast-iron with integral saddle and the barrels are fitted with renewable cast-iron liners. Hendrie pattern by-pass valves are mounted on the steam chests as well as anti-vacuum valves of the S.A.R. pattern. A steam chest pressure gauge is fitted; relief valves and counter-pressure brake fittings are also provided. Lubrication of the cylinders is by means of a Wakefield Eureka four-feed sight-feed lubricator.

Walschaerts valve gear actuates 11 in. dia. piston valves and the reverse gear

is of the Hadfield steam-operated type. Roller bearings are fitted to the return crank end of the eccentric rods and to the reversing links at the eccentric rod connection. The link motion bushes are of bronze, and grease lubrication is introduced through the centre of the pins. Valve spindle crosshead guides are lubricated by Ajax automatic soft-grease lubricators, while the crosshead and slidebars are of the Laird type, oil lubricated. The connecting and coupling rods are of fluted section fitted with grease-lubricated floating bushes.

The front bogie is of the spring-beam type equipped with Skefko roller bearing axleboxes. Side control is by means of laminated springs and the centre bogie pivot is provided with a bronze liner lubricated by oil. The hind truck is also fitted with Skefko axleboxes and side play control is by coil springs.

Steam brake equipment is fitted on the engine and actuates blocks on the front of all coupled wheels except the leading pair. Vacuum braking is provided for the tender and train, a Gresham & Craven SSJ type ejector is fitted, together with a graduable steam brake valve of the Mark IV type. Counter-pressure braking apparatus is provided, similar to that used on existing "9c" class locomotives. Lambert wet sanding provides sand at the front of leading and hind of intermediate coupled wheels. A Teloc speed recorder is fitted in a position conveniently visible to the driver.

Stone's electric lighting equipment includes a turbo-generator, Tonum BE headlight, cab, gauge, and transmission lamps also back-up light on tender. Plugs are arranged on each side of the engine for a portable inspection lamp which has sufficient cable to reach the front of the engine and the rear of the tender.

The double four-wheel bogie tender has a water tank capacity of 5,000 gal. and 650 cu. ft. of bunker space for wood fuel. The tank and bunker is of all-welded construction with ample

wash-plates arranged internally. The staying is so arranged that access to every part of the tank is possible through the filling hole. The space above the tank top is enclosed by a coping and fence for stacking wood fuel. The tank has separate outlets for each injector and a water connection with cock at the rear end for connecting to an auxiliary water wagon. Handrails of stainless steel are provided at each entrance to the cab and on the back of the tank.

The underframe is built up of steel channels and sections and is of welded construction. The bogies, which are of the plate frame spring beam type, are fitted with Skefko roller-bearing axleboxes. The centre pivots are provided with bronze liners lubricated by oil. Laminated bearing-springs are underhung and the spring links are adjustable. One 21 in. dia. vacuum cylinder actuates blocks on the outside of all bogie wheels. A hand brake is also provided.

All necessary equipment including grease pumps, and oil feeders are provided, as well as two traversing screw jacks and two double sided re-railing ramps with each locomotive.

The leading particulars of the locomotive are as follows:—

Cylinders, dia. and stroke	21 in. by 26 in.
Wheels, coupled, dia.	4 ft. 6 in.
" front bogie, dia.	2 ft. 4 in.
" hind truck, dia.	2 ft. 10 in.
" tender bogie, dia.	2 ft. 10 in.
Wheelbase, coupled	14 ft. 5 in.
" engine	32 ft. 3 in.
" engine and tender	60 ft. 2 in.
Height, rail level to boiler centre	8 ft. 7 in.
" top of chimney	13 ft. 2 in.
Heating surfaces—	
Tubes	1,623 sq. ft.
Firebox including arch tubes	154 "
Total evaporative	1,777 "
Superheater	420 "
Total	2,197 "
Grate area	40 "
Boiler pressure	200 lb. per sq. in.
Weight of engine in working order	79 tons 13 cwt.
" tender	51 " 14 "
" engine and tender in working order	131 " 7 "
Adhesive weight	51 " 13 "
Adhesive factor at 85 per cent. boiler pressure	3 205
Tractive effort at 85 per cent. boiler pressure	36,100 lb.

WOODHEAD NEW TUNNEL: COMPLETION OF PILOT TUNNEL.—A further step towards completion of the new double-line three-mile long tunnel between Woodhead and Dunford on the Manchester-Sheffield main line will be the joining-up on May 16 of the pilot tunnel which has been driven during the last two years through the rock and shale of the Pennine hill country. A ceremony will be staged to mark the occasion, when Mr. J. C. L. Train, Member of the Railway Executive responsible for civil engineering, will fire the shot to complete the break-through. The charge will be detonated in the presence of a group, including Mr. J. I. Campbell, Civil Engineer, Eastern Region, under whose direction the general scheme was prepared; Sir William Halcrow, head of the firm of consultants supervising the construction; and Sir Andrew MacTaggart, Director, Balfour Beatty & Co. Ltd., the contractors. Representatives of the workmen will also be present. Completion of the pilot tunnel, which is about one-fifth of the sectional area of the final tunnel, will be

followed by excavating to the full size of 31 ft. in breadth and 24 ft. in height, throughout the total length. Lined with concrete and twin tracks laid the new tunnel is expected to be completed towards the end of next year.

STATEMENT ON G.N.R.(I.) ACQUISITION TERMS.—The chairman of the G.N.R.(I.) Shareholders' Protection Association has issued a statement saying that his committee notes that the Minister for Industry & Commerce in the Republic is reported in the daily newspapers of May 2, 1951, to have defended, as reasonable, the proposed acquisition of the G.N.R.(I.) on the basis of Stock Exchange quotations in 1948, 1949, and 1950. The discussion, as reported, continues the statement, discloses no principle in the Minister's selection among Stock Exchange quotations. At the meeting in Belfast between the Governments and the company on March 12, the Northern Ireland Minister of Commerce took as his relevant precedent the basis applied in the case of the Belfast & County

Down Railway company and all the British railway companies. It then had to be pointed out that the precedent involved him in valuing the G.N.R.(I.) on the basis of Stock Exchange quotations in November, 1946, which would greatly increase the Government's offer. The Minister put the claims on his considerations in this matter in the following order:—Employees, taxpayers, stockholders. Investors will note the position in which they are placed, regardless that the undertaking to be acquired for the Republic is one which the Minister's Parliamentary Secretary credits with earning profits and which will therefore be a benefit and not a burden to the taxpayer. Stockholders are, nevertheless, to be subordinated to taxpayers in fixing a fair price on the ground that the former include stockholders "not in this country." The proportion "in this country" is some 90 per cent. A proportion elsewhere of 10 per cent. seems a strange pretext for withholding from the 90 per cent. what would otherwise be the fair price to them.

British Modern Lightweight Coaches for Indian Railways—2

Methods used to determine stress distribution and deflection of coaches for G.I.P.R. and B.B. & C.I.R.

THE need for greater efficiency in the transport field has never been so urgent as conditions at present demand. The rise in manufacturing, operating and maintenance costs brought about by increased labour, raw material and other costs over the last few years has brought this need to the fore, and railway engineers have not been slow to realise the advantages to be gained by reducing to a minimum the weight of rolling stock. This is being done both by improving design in the traditional materials such as timber and steel, and by greater use of light alloys.

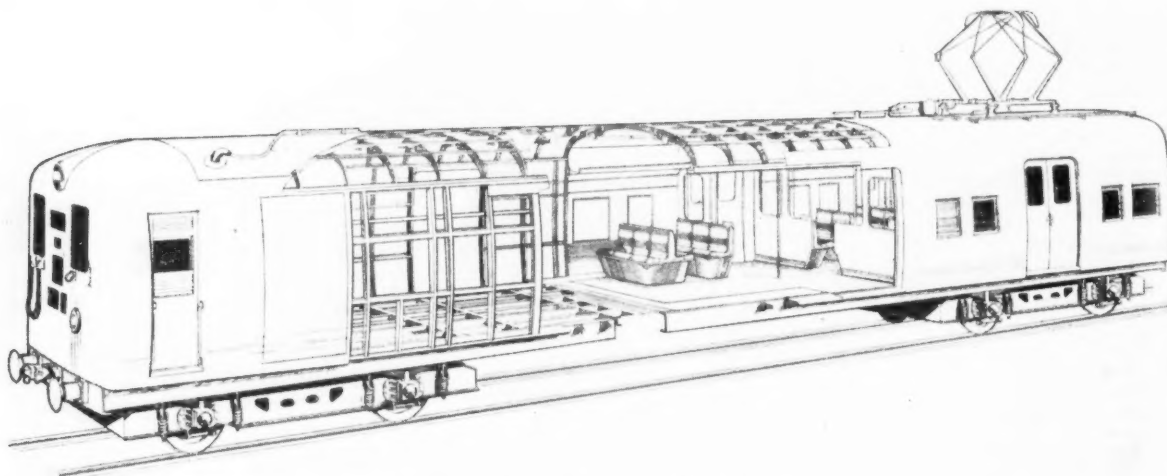
modern trend in design: a driving motor coach is illustrated. The following is a description of the methods used to determine the stress distribution and deflection of these cars.

Form of Structure

It is generally agreed that the main load carrying structure of a coach should be considered as two vertical trusses, necessarily of the Vierendeel type because windows and door apertures dictate the form of construction. Each truss is composed of two longitudinal beams formed by the structure

above and below the windows and doors, which are connected by upright members—the pillars. This form approaches particularly close to the build up of the structure used on the G.I.P.R. and B.B. & C.I.R. coaches, because the centre roof panels are of aluminium-magnesium alloy and are not considered as primary load carriers. The main longitudinal load carrying members of the coach, which form the upper and lower beams of the truss are shown in Fig. 2. Also included are typical pillar sections.

It will be noted that the neutral axes



Drawing showing features of driving car

Much has already been done in the way of reducing weight by good design based on experience. In this manner egregious mistakes have been avoided, but a stage is reached in the progress of a design when the scheme must be considered as a whole, and further reduction of the amount of material used in a structure can be justified only when exact information as to loading conditions, stress distribution and deflection is available. This has led to the investigation of possible methods of stress analysis to be used on the structure of a railway coach. There is a number of different approaches to the problem and it has been necessary to use one which is both adaptable and reliable, whilst not involving excessively long calculations, which slow down design procedure. The need to expedite stress data is important, when a new design is under consideration, as preliminary stress information must be presented before design has solidified.

The new coaches being supplied to the Great Indian Peninsula Railway and the Bombay, Baroda & Central India Railway are a good example of the

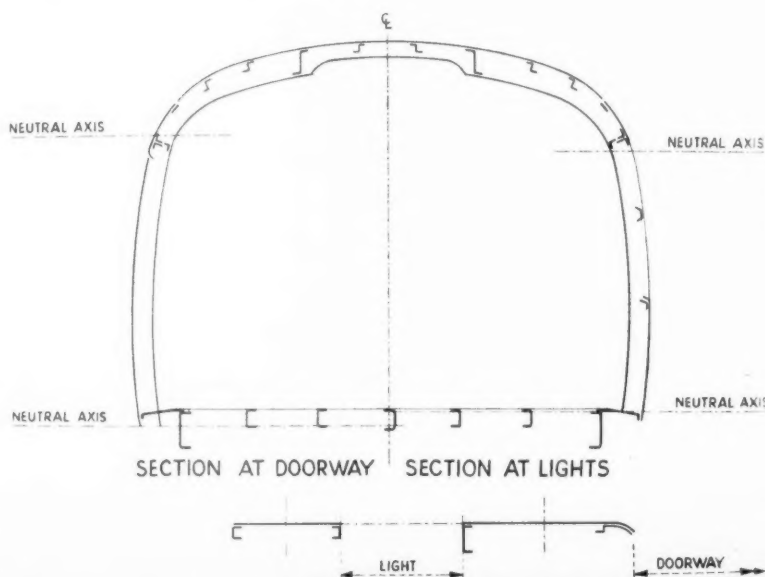


Fig. 2—Diagram showing longitudinal load-carrying members of structure and typical pillar sections

are horizontal and that the moments of inertia of the various members are calculated about these axes. This is not strictly in accordance with theory, as the horizontal is not necessarily one of the principal axes, but this simplifies the calculations, the accuracy of which is little affected by this approximation, chiefly because the trusses are connected top and bottom by roof carlines and floor members and are inter-supporting.

Before any loads can be applied to the coach, the structure must be represented in some form which indicates the framework, at the same time giving in-

more than ensure sufficient strength to carry them.

The train unit consists of two motor coaches and two trailer coaches. The motor coaches support heavy electrical equipment for part of their length adjacent to the driving cab; for the remainder, passenger accommodation is provided. Despite this apparent changing form of loading, the detailed weight estimate reveals surprisingly small departure from a uniformly distributed load condition.

The loading as specified above must now be applied to the system of frames

rectangular frame is cut and sufficient forces introduced to represent completely the original function of the member. To fulfil this need it is necessary to introduce three forces, the combined actions of which will be able to represent any condition of bending moment, shear force and axial load, previously carried by the continuous member.

Some of the more approximate methods of stressing are based on the introduction of one unknown force in each rectangle, and whilst this eases considerably the burden of calculation, the results obtained on the whole are unreliable and not sufficiently accurate for use on a new design.

The three forces introduced into each rectangular frame are shown in Fig. 5. The positioning of these forces differs somewhat from the usual bending moment, shear force and axial load introduced, but by using the system shown it is found that the calculation of component deflections is simplified.

Quite generally, the solution is based on the cutting of one member in each frame; the application of the external loads, thus causing movement at each cut; and then the introduction of loads in the position and direction of the X forces to bring the faces of the cuts together and in line.

The need to calculate the component deflections of each member

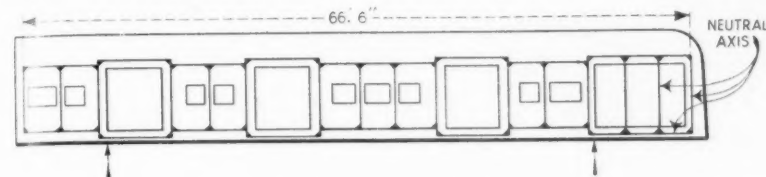


Fig. 3—Diagram showing framing of bodyside by neutral axes forming rigid rectangular frames

formation relating to length and stiffness factors of the various members. Such a representation is given by Fig. 3, known generally as a framing diagram. The need for this diagram will be realised more fully later in the procedure when it will be shown that the deflection of each member under special load conditions is required before the stress analysis can be completed. As will be seen the solution of this problem involves a highly redundant structure of rectangular frames with rigid joints.

Loading of Coach

The loads which are to be applied to the framework must now be determined; these fall under two general headings:—

(a) Vertical loads due to structural and equipment weights together with payload.

(b) Horizontal buffing loads.

The vertical loads can be estimated accurately from a study of design drawings and customers' requirements, but the exact values of horizontal loads met with in service are difficult to assess because they depend to a large measure on unknown or unpredictable factors. A compromise is reached usually and the railways specify a buffing load which will have to be withstood without failure.

The table below shows the loading conditions for which full stress data were required on the G.I.P.R. and B.B. & C.I. coaches.

Test No.	Load superimposed on structural, equipment and furnishing weights
1	Seated passenger load, 6.875 tons
2	Crush passenger load, 12.125 tons
3	Dense crush passenger load, 18.00 tons
4	Head-on buffing load of 100 tons combined with passenger load of 12.125 tons

It is of interest to note that in service there is a secondary group of forces applied to the coaches in a lateral direction caused by centrifugal and wind forces, these being resisted mainly by the roof and floor structures.

These loads are of a comparatively low order and will not now be discussed further as other loading considerations

shown in Fig. 3 and carried through the various members to the bolster supports.

Treatment of Rectangular Frames

From a study of Fig. 4 it can be seen that the loading conditions are

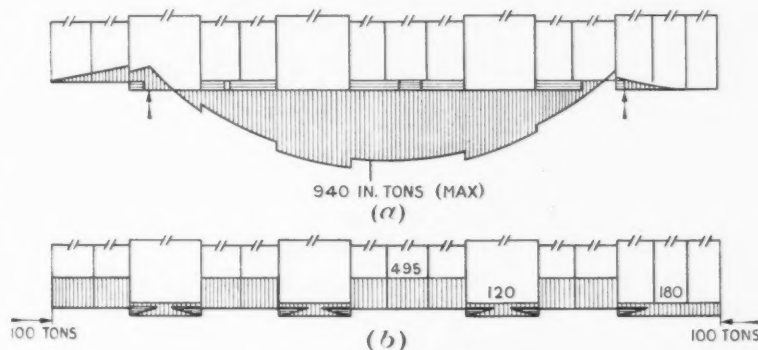


Fig. 4—Bending moments plotted on tension side of member. External bending moments due to (a) maximum vertical load and (b) 100 tons buffing load

simple, but that the structure is statically indeterminate. As a first step towards a solution, one member in each

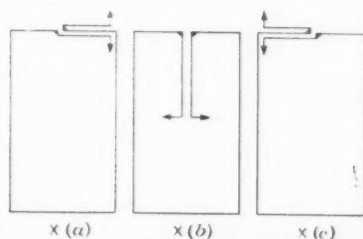


Fig. 5—Introduction of three unknown forces at each cut. The forces act at the extremities of arms rigidly fixed to faces of cut

affecting a given cut thus becomes apparent, the total deflection being obtained by summation over all relevant members.

In mathematical terms this can be stated as follows:—

$$X.a. \delta a.a + X.b. \delta a.b + X.c. \delta a.c \dots \dots \dots = -\delta a.o \dots \dots \dots (1)$$

Where:

$\delta a.o$ —is deflection in direction of X.a. at point at which X.a. acts, when all external loads are applied to the structure.

$\delta a.a$ —is deflection in direction of X.a. at point at which X.a. acts, when "unit" load is applied at X.a.

$\delta a.b$ —is deflection in direction of X.a. at point at which X.a. acts, when unit load is applied at X.b and so on.

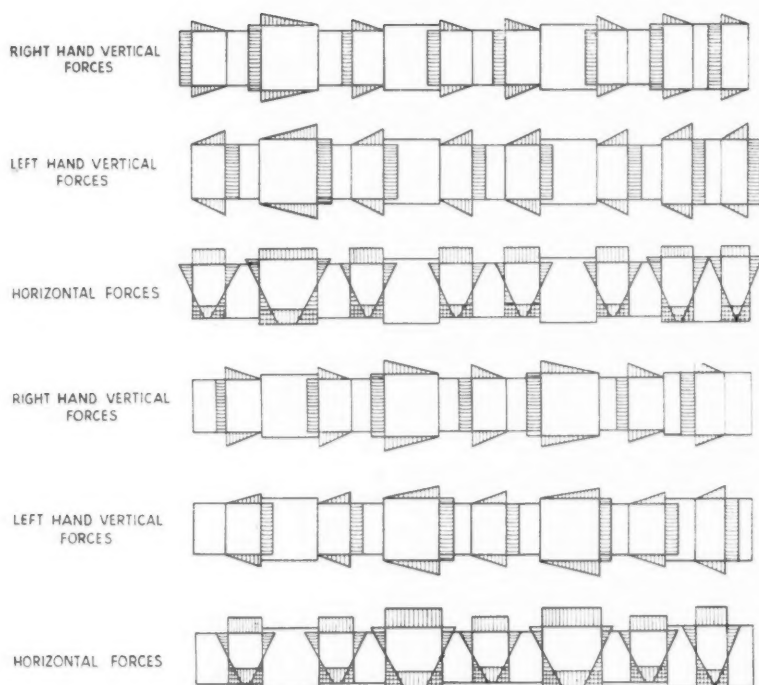


Fig. 6—Unit bending moment diagrams

The values of " δ " are calculated from the following standard equation of work.

$$\delta a.b = \sum \left[\int_0^l Ma.Mb. \frac{ds}{EI} + \int_0^l Pa.Pb. \frac{ds}{EA} + \int_0^l Qa.Qb. \frac{ds}{GA} \right] \dots \dots \dots (2)$$

Where Ma , Pa and Qa are bending moment, axial load and shear force respectively in length ds , of any member of the frame, caused by the application of "unit" force in position of Xa and Mb , Pb and Qb are similar quantities due to the application of "unit" force in position of Xb . The summation embraces all members affected by both Ma and Mb .

The above terms involving deflection due to shear forces and axial loads have a minor influence on the structure and they have therefore been eliminated from the calculations used on this coach. Therefore

$$\delta a.b = \sum \left[\int_0^l Ma.Mb. \frac{ds}{EI} \right] \dots \dots \dots (3)$$

It will be realised that the integration of the bending moments and hence calculation of delta values required in the above elasticity equation will be simplified if the "unit" forces applied in the positions and direction of the unknown X forces are such as to give bending moment values of unity. This in no way alters procedure until the values of X have been calculated, when it must be remembered that the true values of the bending moments are obtained by applying X to the special "unit" values and not to the actual value of unity. The bending moment diagrams having

values of unity caused by the application of the special "unit" loads in the position and direction of the X forces are shown in Fig. 6.

The body-side structures of coaches for different uses vary tremendously in the number of rectangular frames, and the proportioning of various apertures. For each rectangular frame in the body-side three unknown forces must be evaluated, so that any short cuts presented by symmetry of structure or loading are extremely welcome to the

stressman. Unfortunately, the stressman representing the driving motor coach body-side structure of the Indian Government Railway involves 15 rectangular panels which are not symmetrically placed and therefore the solution for the values of X forces is somewhat tedious, involving the determination of 45 unknowns from as many simultaneous equations, constructed by relating each of the unknowns to the external loading condition by equation (1).

The solution of simultaneous equations by determinants has to be abandoned as soon as the order of the system approaches seven or eight because the solution of n equations in n unknowns involves the computation of $(n + 1)$ determinants of the n th order. With a system such as the one at present under review, a form of solution such as is offered by Gauss' scheme is recommended as it is perfectly suited to slide-rule or calculating machine computations and may become a routine matter which can be checked with little trouble.

Stress Values

Having once obtained precise values for the X forces, these only need to be applied in their respective positions and each member stressed by standard methods. It will be as well perhaps to describe this procedure in a little more detail.

As mentioned previously, the unit loads were so chosen that the bending moments caused by them were of the unit value, and therefore the actual bending moment existing in any member is X times as great as the bending moment shown in Fig. 6. Also to be recollected at this stage is the application of the external loading condition which was shown in Fig. 4 affecting the lower members, as the top member in each rectangular frame was cut and subject to the "unit" loads. The result of this

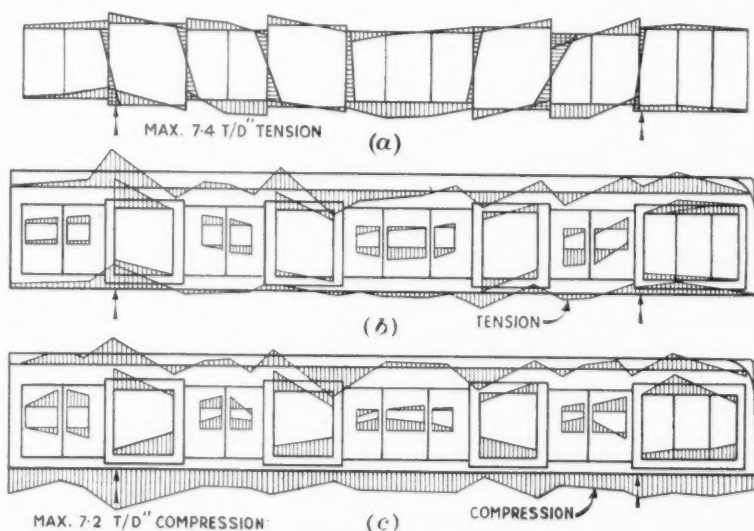


Fig. 7—(a) Bending moment distribution for maximum vertical loading condition; (b) stress distribution for maximum vertical loading condition; (c) stress distribution for crush load and 100 tons buffing load

is that when all the values of the bending moments caused by the X forces are known, each member must be considered separately in relation to all the bending moments affecting that member and the resulting bending moment used for the calculation of bending stress. Thus all upright and upper members will be subjected to bending moments which are the result of applying X forces, whilst the bending moment applied to lower members is the result of combining bending moments due to both X forces and external loads.

It was found convenient when setting out the "unit" bending moments to draw a set of small framing diagrams one below the other, as shown in Fig. 6, so that all moments affecting a given

stresses were calculated. Fig. 7(c) shows the stress distribution for Test 4, i.e. 100 ton buffing load combined with crush passenger loading. The values of stress calculated at the various points along the structure are plotted on the extreme fibres of the component members and represent the maximum values expected. It is to be expected in practice that these values will prove to be higher than the actual stresses, because much of the structure, furnishings and internal panelling, not assumed load carrying in the calculations in fact will play some part in resisting deflection by virtue of their connections with the main load bearing structure. Nevertheless, by means of these stress diagrams it is possible to keep a close watch on

Where

M_u is the bending moment due to the application of unit load at the point under consideration.

M is the bending moment in any member due to loading condition being considered.

Unit load was applied on the centre line of the I.G.R. coaches as shown in Fig. 8 and the above summation completed. The results obtained indicated that the total deflection for the maximum vertical loading would be in the region of .25 in. which lies comfortably within the specified deflection of .375 in. It is of interest to note that tests on the car have shown deflection at the centre line under the maximum vertical load to be .23 in., a gratifying result indicating that confidence in the above method was not misplaced.

In conclusion, it should be realised that stressing methods amongst railway engineers vary considerably, depending on the importance attached to the results, and the staff available to carry out such investigations, but it is to be hoped that in future some generally acceptable standards will emerge. It may be stated confidently that the load-carrying body has come to stay, and enlightened engineers are requiring full stress data relative to modern designs, but comparatively few firms have as yet carried out thorough stress investigations.

Many coaches are still built which are not designed as complete load carrying units, the underframe designed to carry all loads still enjoying favour with some designers, but as the advantages of the load-carrying body become more generally appreciated, it is felt that it will come to be accepted by railway engineers as has already happened in other fields of public transport.

(To be continued)

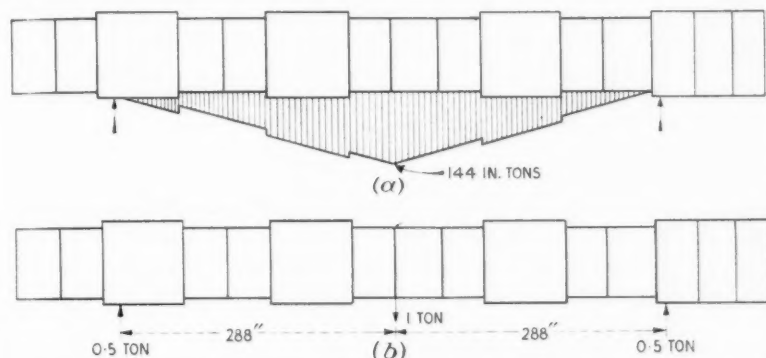


Fig. 8—(a) Bending moment diagram due to application of unit load at mid-point between bolsters; (b) application of unit load to lower chord

member were immediately visible and the final summation of moments facilitated.

Fig. 7(a) shows the resulting distribution of bending moments through the entire bodyside structure for the maximum vertical loading condition, and Fig. 7(b) shows the bending stresses calculated from these moments. Stresses due to axial loading and shear forces have not been included in this diagram. However, should these stresses be required no trouble is presented and they can be obtained by use of standard formulae.

The procedure above outlined lends itself readily to the stressing of a coach subjected to more than one loading condition, when values for each condition are required separately as well as in combined form. For each new load condition it is necessary only to calculate new values for δ a.o. because in equation (1) it will be noted that the left-hand side remains unaltered by the load condition, being evolved by reference to the structure. The advantages accruing from this become apparent in the solution of the system of simultaneous equations by the Gauss method.

The table indicates that stress distributions were required for various static vertical loading conditions and also for vertical loading combined with a horizontal buffing load of 100 tons. To meet these requirements the vertical and horizontal conditions were solved separately and combined when the

the strength of the structure and gauge its capacity to deal with expected load conditions.

Deflections

Deflection is a matter which is often as important as the stress distribution, because it must not be sufficient to affect in any way operation of sliding doors and other sliding parts, or to give the coach the appearance of having a "broken back."

In the older forms of coach, the designer often incorporated an unsightly truss beneath the floor structure, in case the structure proved unequal to the task. The G.I.P.R. and B.B. & C.I.R. coaches are designed completely as load carrying units and so have no need of this. Consequently they present a cleaner appearance than many coaches.

The deflection of any given point on the coach structure can be obtained quite simply once the internal bending moment distribution is known, by the usual method of applying a unit load in the direction and position at which the information is required. The bending moment diagram for the unit load is then drawn and the deflection obtained by integrating the moments due to the condition being considered and the moments due to the applied unit load.

Deflection

$$\delta = \sum \int_0^l \frac{M_u \cdot M}{EI} ds \dots \dots (4)$$

REVISED NON-FERROUS SCRAP PRICES.—The Minister of Supply has made a new Order which consolidates earlier Orders, revises certain maximum prices of scrap, and provides for special prices for exceptional transactions. The Order—the Non-Ferrous Metals Prices (No. 4) Order, Statutory Instrument 1951 No. 773—came into force on May 4.

INTERNATIONAL MACHINE TOOL EXHIBITION.—A machine tool exhibition which is to be held at the Porte de Versailles, Paris, from September 1 to 10 next will have two special points of interest; firstly, it will cover machine tools exclusively; and, secondly, arrangement of the exhibits will be by classes of machine rather than by makers. Largely as a result of the demands made by the defence programme the participation of British makers will be comparatively small. The exhibition is being strongly supported by tool makers in Belgium, France, Germany, Italy, Switzerland, and Sweden, and other countries. It is the first of a series to be held regularly in the main industrial centres of Western Europe, and on this occasion is being organised by the Syndicat des Constructeurs Français de Machines-Outils, 2-bis rue de la Baume, Paris, 8e.

New Cumberland River Bridge, S.R., U.S.A.

A 270-ft. high double-line deck cantilever truss structure forming part of a diversion necessitated by the building of a large dam and reservoir in Kentucky

AS a result of the building of Wolf Creek Dam and the formation of a reservoir above it, the Chattanooga-Cincinnati section of the Southern Railway system, U.S.A., has had to be diverted for 4.12 miles. The work has entailed the construction of 3.54 miles of new double line and the reconstruction of 0.58 mile of existing double line. The construction works have been heavy and costly, mainly because a new high-level bridge had to be built over the Cumberland River, to provide adequate headway for future navigation on the reservoir, necessitating a rail level over 270 ft. above the river bed. Even with deck cantilever truss spans, the two middle piers are over 200 ft. in height.

In addition, some 450,000 cu. yd. of excavation in solid rock was required, and 2.75 miles of private sidings had

construction was the use of sliding forms or shuttering, which were jacked upwards at the same rate as the concrete was poured and set. Though this method necessitated vertical pier faces with two or three offsets instead of the more usual tapered batter, and therefore rather more concrete, the resulting economy more than balanced the cost of the additional volume of materials.

Sliding Forms Used for Piers

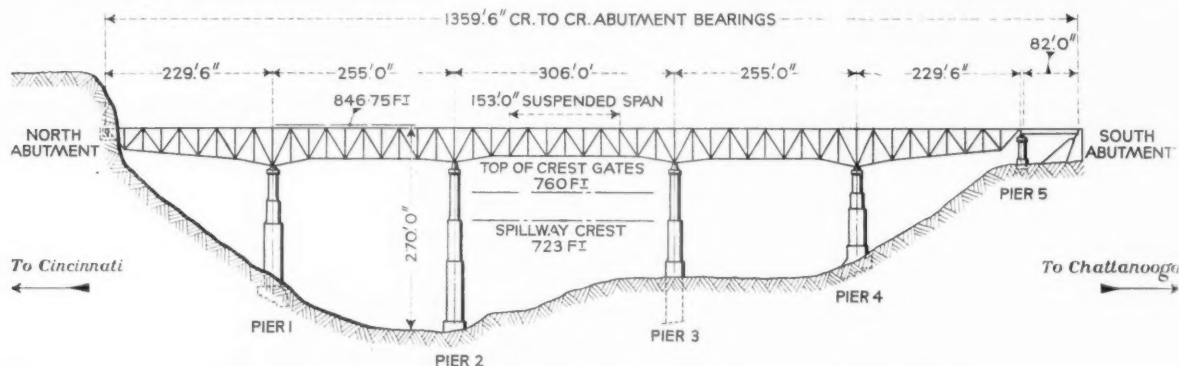
The sliding forms were 4 ft. high and consisted of 3-in. \times 1-in. tongued and grooved timber backed by two rings of triple 3-in. \times 10-in. wales. Transverse and longitudinal timber yokes were used as bracing across the top of the forms and extended down the outside also; they were secured to the wales by bolts and rods. The forms were

concrete. In cold weather both concrete and water were heated so as to reach the forms at from 65° to 70°.

Having no anchorage to any fixed point and being constantly on the move, the precise position of each form had to be carefully checked at frequent intervals to ensure that it retained its correct position. To keep the work truly vertical it was checked twice daily against plumb lines.

Surfacing of the concrete was carried out by one man working immediately below the form with a wood float. Curing was effected with the aid of a horizontal perforated ring pipe spraying water continuously on to the surface of the pier at the point where the colour of the concrete was changing from dark grey to white.

At the offset points where the section



Elevation of new double-line deck-truss cantilever bridge over the Cumberland River

to be built, as well as a new combined passenger and goods station. Like the main line diversion, these sidings replace others that would have been submerged in the reservoir formed by the dam.

The net result to the railway is a greatly improved line, now 755 ft. shorter than the old one. An awkward dip down to cross the old Cumberland River bridge and two tunnels each over 1,000 ft. long, situated on 22-ch. and 14½-ch. curves have been eliminated, as has also the old single-line bridge. Reductions have been effected in central-angle curvature by 150 deg., in rise and fall by 59 ft., in ruling gradient from 1 in 88 to 1 in 100 northbound and 1 in 125 southbound, and in sharpest curve from 14½ ch. to 17½ ch. rad.

The new bridge has supporting ground on both flanks and therefore consists of five main spans and only one deck plate-girder approach span. The piers and abutments are of reinforced concrete and are founded on rock; in plan, the piers take the form of twin octagons, with, alternately long and short sides, and a connecting diaphragm between them. An outstanding feature of their

lifted by from 20 to 24 screw jacks—the number depending on the size of the form—each of which was clamped to one of the 1-in. vertical reinforcing rods, and turned in a threaded block secured to the yoke. The jacks were worked by from two to four men, who walked round a working platform provided for the purpose, giving the jacks ¼ to ½ a turn at a time, which raised the form ¼ in. to ½ in., the amount depending on the rate of setting of the concrete. The tops of the reinforcing rods, including those used for jacking, were held in correct position by a timber template about 10 ft. above the forms, and this also provided a staging for the chutes and hoppers used for pouring the concrete.

As soon as the bottom foot of concrete in the form was shown by probing with a steel rod to have set sufficiently, the form was jacked up by that amount, and the process was continued accordingly. It was found that the best results were obtained when the inflow kept the form full, and the rate of pouring varied from 4 in. to 9 in. an hour according to the temperature of the

of the pier changed, the work stopped for about five days to enable the forms to be cut down to the new size. The piers of this bridge have a clean and uniform appearance, and construction joints are less noticeable than when conventional shuttering is used.

Superstructure

The main-span superstructure is symmetrical about the centre span, which consists of a 153-ft. suspended span flanked by two 76-ft. 6-in. cantilever trusses; there is an expansion joint at one end of the suspended span and a hinged joint at the other.

The bearings on the two central piers are both of the expansion type and the intermediate spans on each side are 255 ft. in length. The bearings on the outer piers are fixed and the landward anchor-arm spans measure 229 ft. 6 in. The trusses are 50 ft. deep over the outer piers and 46 ft. over the central piers. The suspended span is 36 ft. deep, and the bridge is designed for Cooper's E-72 loading. Silicon steel is used throughout the superstructure except in the vertical members.



Left: Pier 2 under construction, and, right: looking south over completed piers. Steelwork in progress on the south end and first begun from north abutment (see lower right)

Earthworks were begun in October, 1948, and were completed just a year later. Erection of the superstructure began in August, 1949, and was finished in September, 1950; the first train passed

over the bridge on August 3. After the erection of the 82-ft. plate-girder approach span at the south end of the bridge, the adjoining anchor-arm span was erected on falsework as far as pier

No. 4, beyond which it was cantilevered out to pier 3. The cantilever arm was then continued towards pier 2, and half the suspended span was cantilevered out in continuation of it. Erection was then



Girder erection nearing completion with closure of central suspended span in hand



Placing cast length of decking to complete the superstructure. Highway bridge nearing completion in background

carried out similarly from the north end. Other smaller works included a 5-ft. \times 5-ft. concrete box culvert, concrete pipe culverts of from 24 in. to 42 in. with an aggregate length of 1,890 l.ft. and with concrete face walls, a 4-ft. arch culvert, a steel and concrete road overbridge and a road underbridge. Embankments measure 33 ft. between shoulders and have $1\frac{1}{2}$ to 1 side slopes; excavated material was spread in layers and rolled with heavy haulage plant.

Cuttings were excavated a foot below subgrade level and backfilled with selected material. Formation in them is 44 ft. wide and side slopes are $\frac{1}{2}$ to 1 in rock and 1 to 1 elsewhere. In two cuttings, each 75 ft. deep, in unstable rock, 14-ft. horizontal benches were cut about 30 ft. below natural ground level and slide detector fences were erected. Permanent way consists of 132-lb. rails laid with bearing plates on creosoted oak and gum sleepers spaced 1 ft. 10 in. apart.

Clean crushed $1\frac{1}{2}$ -in. limestone ballast was spread to a depth of 1 ft. 2 in.

The planning and construction of the whole project were carried out under the direction of Mr. J. B. Akers, Chief Engineer, Southern Railway System, by three main contractors. For this information we are indebted to our contemporaries *Railway Age* and *Railway Engineering & Maintenance*, and for the illustrations reproduced to the Southern Railway System.



Three bridges over the Cumberland River: old single-line low-level railway bridge in background; newly-completed highway bridge (centre); and new railway bridge in foreground

RAILWAY NEWS SECTION

PERSONAL

Mr. A. F. Bruyns-Haylett, Chief Civil Engineer, South African Railways, has retired and has been succeeded by Mr. O. R. Spyker, Chief Works & Estates Officer, General Manager's Office.

Dr. Miguel Revestido, formerly Sub-Manager of the Argentine National Gas Administration, who, as recorded in our

Railway, he joined the L.S.W.R. as a carriage and wagon draughtsman at Eastleigh in 1894, and four years later was appointed as Chief Draughtsman, in which capacity he was responsible for the preparation of designs for the corridor coaches and dining cars then being introduced on that Railway. In 1914 Mr. Shepherd was appointed Chief Assistant & Works Manager to Carriage & Wagon Superintendent and when, after the grouping, the L.S.W.R. Locomotive and

Mr. Arthur Dean, M.Sc., D.I.C., M.I.C.E., who, as recorded in our April 20 issue, has been appointed Civil Engineer, North Eastern Region, has hitherto been Chief Officer, Engineering (Works), Railway Executive. After post-graduate and research work at the City & Guilds' Engineering College, he spent two years with John Butler & Co. Ltd., the constructional engineers of Stanningley, near Leeds, and in 1924 joined the Southern



Dr. Miguel Revestido
Appointed General Manager, General Belgrano
Railway, Argentina



Mr. Arthur Dean
Appointed Civil Engineer, North Eastern
Region, British Railways

March 9 issue, has been appointed General Manager of the General Belgrano Railway, is a graduate of the Faculty of Economic Sciences of the University of Buenos Aires. He was appointed Sub-Accountant of the Lands & Forests Board of the Ministry of Agriculture in 1944 and after transferring to the National Gas Administration in 1945, he was successively Chief Accountant, General Secretary, and Administrative Director. In 1949 he became a Member of the Board of the State Oilfields Administration, where he also received the appointment of General Manager and Vice-President. Before taking up his new appointment with the General Belgrano Railway, Dr. Revestido had been Sub-Manager of the National Gas Administration.

We regret to record the death, at the age of 80, of Mr. A. A. Shepherd, who retired as Carriage & Wagon Works Manager, Eastleigh, Southern Railway, in 1930. After training with the Lancashire & Yorkshire

Carriage & Wagon Departments were merged into the Chief Mechanical Engineer's Department, he became Carriage & Wagon Works Manager, Eastleigh; he held this position until his retirement in 1930. His son, Mr. C. A. Shepherd, is Carriage & Wagon Works Manager, Eastleigh. The funeral service was conducted by the Rector of Basingstoke at Eastleigh Parish Church on April 14.

Major W. Oldfield, Chief Mechanical Engineer, Southern Railway, India, is proceeding on leave at the end of this month preparatory to retirement.

BRITISH RAILWAYS APPOINTMENTS

The Railway Executive announces that Mr. S. F. Major, Principal Assistant to Estate & Rating Surveyor, Western Region, has been appointed Estate Surveyor, North Eastern Region. The Executive has also appointed Mr. G. J. Shepherd, Chief of Police, Eastern Area, to the position of Chief of Police, Scottish Area.

Railway in the bridge section of the Chief Engineer's Office. In 1936 Mr. Dean was appointed Assistant Divisional Engineer, London West Division, and became Divisional Engineer, London East Division, in 1939. In 1942 he returned to Southern Railway headquarters as Assistant Engineer (General Maintenance), an appointment which was re-designated Maintenance Engineer in 1944. Mr. Dean was appointed Assistant Chief Civil Engineer, Southern Railway, in 1946 and was transferred to Railway Executive headquarters on January 1, 1948, as Chief Officer Engineering (Works). He was awarded a Telford Premium by the Institution of Civil Engineers for his paper on "The Repair of War Damage to Railway Way and Works in the London Area 1940-41". He was a member of the European Railway Mission which recently visited the U.S.A. under the auspices of the Organisation for European Economic Co-operation and acted as Chairman of the Permanent Way & Structures Group.



Mr. S. B. Lovegrove

Appointed District Operating Superintendent, Birmingham (Western), London Midland Region



Mr. J. M. Fyfe

Appointed Assistant to Motive Power Superintendent (Utilisation), Scottish Region



Mr. W. H. Underwood

Appointed Assistant to Motive Power Superintendent (Maintenance), Scottish Region

Mr. S. B. Lovegrove, Assistant District Operating Superintendent, Stratford, Eastern Region, who, as recorded in our April 13 issue, has been appointed District Operating Superintendent, Birmingham (Western), London Midland Region, started his railway career in 1920 as a junior clerk in the former Great Eastern Railway Locomotive Accountant's office at Stratford. He was selected as a traffic apprentice by the L.N.E.R. in 1927 and after a period of training was appointed Assistant Yardmaster at Ferme Park. A year later he became Stationmaster at Dunford Bridge, and in 1933 was appointed Deputy Chief Controller, District Superintendent's Office, Manchester. Between 1937 and 1944 Mr. Lovegrove was successively Yardmaster at Sheffield and at Grimsby Docks, Supernumerary Assistant to the Superintendent, Eastern Section, and to the Trains Assistant, District Superintendent's Office, Cambridge. In 1944 he became Acting Assistant District Superintendent, Leeds, and was officially appointed to this position in January, 1945. In the same year he became Acting Assistant District Superintendent, Godley (Manchester) and, returned to his former post at Leeds in 1946. Mr. Lovegrove became Assistant District Superintendent, Manchester, in 1947, and a year later was appointed Assistant District Superintendent, Stratford, Eastern Region. He was awarded the Brunel Medal in 1926 for transport subjects at the London School of Economics.

Mr. V. R. Riley, Deputy Financial Adviser & Chief Accounts Officer, Oudh Tirth Railway, is at present on leave in the United Kingdom.

We regret to record the death on May 2, at the age of 76, of Rear-Admiral Tufton Beamish, C.B., D.L., who retired from the board of Tyresoles Limited and from the board of the parent company, Henry Simon (Holdings) Limited, in 1950.

PRESENTATION TO MR. E. M. HALL

At a meeting of members of the Accountant's Department, Eastern and North Eastern Regions, at the Royal Station Hotel, York, on April 19, Mr. E. M. Hall, who retired on April 30 from the position

of Works Accountant, Doncaster, was presented with a pair of binoculars by Mr. T. R. Hawkes, Accountant, Eastern and North Eastern Regions.

Mr. J. M. Fyfe, Assistant to Motive Power Superintendent (Maintenance), Scottish Region, who, as recorded in our March 9 issue, has been appointed Assistant to Motive Power Superintendent (Utilisation), received his technical education at Paisley Technical College and served his apprenticeship at the Hyde Park Works of the North British Locomotive Co. Ltd. He joined the railway service at Coatbridge early in 1921 and went to the Mechanical Engineer's Department of the North British Railway at Kippis Works; in the following year he moved to the Drawing Office, Cowlaers Works, as a junior draughtsman. In 1924 Mr. Fyfe was appointed fitter-in-charge, Locomotive Running Department, Alloa, L.N.E.R., and two years later became Running Foreman, Hawick; he was appointed Running Foreman, Dunfermline, in 1927. After six years as Technical Inspector to the Locomotive Running Superintendent, Scottish Area, L.N.E.R., he was appointed Assistant District Locomotive Superintendent, Edinburgh, in 1939, and five years later became Assistant to Locomotive Running Superintendent, Scottish Area, L.N.E.R., Edinburgh. In February, 1949, Mr. Fyfe was promoted Assistant to Motive Power Superintendent, Scottish Region, and a few months afterwards was appointed Assistant to Motive Power Superintendent (Maintenance), Scottish Region.

Mr. T. C. Courtney, Chairman of Coras Iompair Eireann, with Messrs. Daniel Herlihy, Chief Engineer, and O. V. Bulleid, Chief Mechanical Engineer, are visiting France for discussions with officers of the French National Railways.

Mr. J. J. Carter has retired as Managing Director of Crossley Brothers Limited, after holding that position for 35 years, but is continuing as a Director of the company, and is also continuing in his capacity of Chairman of Crossley-Premier Engines Limited. He has been succeeded as Managing Director by Mr. H. Desmond Carter, Director & Chief Engineer of the company.

Mr. W. H. Underwood, M.B.E., A.I.Loco.E., Assistant District Motive Power Superintendent, Glasgow (North), Scottish Region, who, as recorded in our March 9 issue, has been appointed Assistant to Motive Power Superintendent (Maintenance), entered the service of the North British Railway as a fitter in the Mechanical Engineer's Department at Burntisland in 1919. After service in the Locomotive Running Department at Kippis, Coatbridge, Mr. Underwood was appointed Shedmaster, Helensburgh, in 1931, and three years later became Shedmaster, Stobcross. In 1939 he was promoted Headquarter's Technical Inspector, to the Motive Power Superintendent, L.N.E.R., Edinburgh. Mr. Underwood was appointed Assistant District Motive Power Superintendent, Western District, Glasgow, in 1941, and apart from a period as acting District Motive Power Superintendent at Burntisland, has remained in Glasgow, latterly as Assistant District Motive Power Superintendent, Glasgow (North). In the first World war he served for four years in France with the Royal Engineers and in the recent war was in command of the 8th City of Glasgow (L.N.E.R.) Home Guard Battalion.

We regret to record the death on April 30 of Mr. J. M. Dalgleish, Chairman of Stelf & Leighton Limited.

Mr. John F. Alcock, hitherto Joint Managing Director, has been appointed Chairman & Managing Director of the Hunslet Engine Co. Ltd.

DR. HANS HUNZIKER—AN APPRECIATION

A correspondent writes:—There died at Bern on March 14, at the age of 73, Dr. Hans Hunziker, until recently Director of the Central Office of International Railway Transport.

The loss of this notable personality in Swiss transport circles will be keenly felt, not only at the Central Office, but also in many Swiss and foreign circles with which he had been in close contact in the course of his long administrative activity. The fame which Dr. Hunziker had achieved in the realm of transport and communications resulted in his being appointed on July 1, 1943, as head of the Central Office of Inter-

national Transport, of which he remained the Director until December 31, 1949, when he retired.

A large part of his active participation in the work of the Central Office took place under wartime and postwar conditions, when international traffic conditions suffered from wartime restrictions, but it was under such conditions that his experience proved of immense value to the Organisation and he guided the Central Office to a position of esteem never previously attained.

TRANSPORT USERS CONSULTATIVE COMMITTEES

The Minister of Transport has appointed the Transport Users Consultative Committee for the South Western Area, and has made two other appointments in the Welsh and West Midland Areas, as follows:—

Colonel Mark Whitwill (Chairman), Chairman of the South West Regional Board for Industry, Shipowner.

Mr. R. L. Johnston, general farmer.

Mr. J. Laity, Past Chairman of National Farmers' Union County Branch.

Mr. B. R. Jones, Transport Manager for the Imperial Smelting Corporation, and head of its Central Transport Office.

Mrs. M. L. Lidington, Member of the Central Board of the Co-operative Union.

Colonel John Pye, Director of H. Pye & Sons Ltd., Shaw Motor Co. Ltd., and other companies.

Mr. P. Nobes, Transport Manager of Selleck Nicholls & Co. Ltd.

Mr. P. M. Cole, Officer-in-Charge of the National Coal Board's Marketing Office for the South Western Region.

Mr. G. A. S. Shedden, Director of Bristol Steam Navigation Co. Ltd.

Mr. W. H. Peacey, full-time Secretary of the Swindon Branch, National Union of Vehicle Builders.

Mr. A. S. Dopson, District Organiser, National Union of General & Municipal Workers.

Councillor Colonel R. M. S. Baynes, Member of the Somerset County Council.

Councillor F. G. Wilkins, Member of the Wiltshire County Council.

Alderman B. C. Meehan, Chairman of several Gloucester City Council Committees.

Alderman L. J. Hodge, former Chairman of the Passenger Transport Committee of the Plymouth City Council.

Mrs. I. Seed, Honorary Secretary, Yeovil Branch, National Council of Women. Additional member to represent the travelling public.

Mrs. H. M. Pitts, additional member to represent the travelling public.

Mr. H. Bolton, District Commercial Superintendent, Bristol, Western Region, British Railways.

Major F. J. Chapple, Chairman, Bristol Tramways & Carriage Co. Ltd.

Mr. R. H. Sims, District Commercial Superintendent's Office, Bristol, Western Region, British Railways, is the Secretary of the Committee.

One further representative of agriculture is still to be appointed.

Welsh Area

Mr. W. Hazell, President of the Ynysybwl Co-operative Society Ltd., to be a member of the Committee, in place of Mr. S. Davies, deceased.

West Midland Area

Mr. F. Jones, County Chairman of Worcestershire County Branch of the National Farmers' Union, to be a member of the Committee, in place of Mr. F. B. Bent, deceased.

Canadian Pacific Railway Company

Railway net earnings improve: Effect of higher costs of materials and labour

The annual general meeting of the Canadian Pacific Railway Company, whose financial results for 1950 were dealt with in an editorial article in our April 6 issue, was held in Montreal on May 2. Mr. George A. Walker, Chairman of the company, presided.

Mr. W. A. Mather, President, addressing the shareholders, said that, although a private enterprise, their company had always recognised the responsibility entrusted to it of serving the interests of the public. The company had, throughout its long history, supplied transportation services for Canada at rates lower than had been found possible in the case of the railways of any other highly developed nation of the Western World. At the same time it had maintained standards of service which would bear rigid comparison with those of other railway systems. The company had furnished Canada with valuable facilities in ocean transportation and in recent years had undertaken important operations in the field of air transport.

There had been times when economic conditions had placed them in a difficult position. There had been other periods, fortunately longer, during which the company had been able to pay a modest, but never more than a modest, return on capital prudently invested in the property. Now, at the end of 70 years, he believed that they might regard with satisfaction the fact that the company had survived, grown, constantly strengthened its foundations, and was fulfilling the purposes for which it was created.

The annual report provided a comprehensive review of activities during the year as well as a record of the results of operation. Railway net earnings improved over the previous four years, but it would be remembered that net earnings in those years were abnormally low, because of the serious imbalance between costs and rates. Inspection of the accounts showed that earnings from rail operations in 1950 were still less than satisfactory having in mind the large traffic volume.

An appraisal of the results would be incomplete without indicating the effects on the future of the increases in costs which had taken place and which were continuing to occur. Most important were the increases in labour costs. With 85,000 employees and an annual payroll in excess of \$230,000,000, the company was severely affected by movements in wage rates. The award of the arbitrator appointed to settle the dispute with the non-operating employees included a direct wage increase of 7 cents an hour and an indirect wage increase through the reduction of the work week from 48 to 40 hours with weekly pay maintained. The establishment of the forty-hour week would involve nearly double the cost of the direct wage increase. Recently, negotiations with their locomotive engineers resulted in agreements providing for a wage increase of 11 per cent., with certain minor modifications in rules. Agreements had also been completed with the organisations representing other running trades, including firemen, trainmen, and conductors, providing for a wage increase of 14½ cents an hour.

During the latter part of 1950 material prices began to rise sharply and an increase of 11 per cent. to 12 per cent. was experienced. In the first part of the current year the index advanced still further and there

was as yet little sign of abatement. Increased material costs were a matter of great concern because total purchases, almost wholly in Canada, were more than \$142,000,000 in 1950. Finally, income tax would be higher because of the increase from 33 per cent. to 38 per cent. made effective last September. The recent budget provided for an increase in the sales tax which would be reflected in the price of materials and for a 20 per cent. defence surtax on corporation income taxes which would apply to the earnings of the company should they exceed a return of 5 per cent. on the capital employed.

Freight Rate Increases

The application for a 5 per cent. increase in freight rates made by Canadian railways last December and heard in January, was still under consideration. An amending application was filed on April 23, for an additional general increase of 14 per cent., with exceptions for coal and coke, or, alternatively, an increase of 15 per cent. with additional exceptions on a number of other commodities. This increase was required to provide, among other things, for the added cost of the forty-hour week. No further action had as yet been taken in connection with that part of the application requesting the Board of Transport Commissioners to establish a rate base representing the net investment in the railway property and to fix a fair rate of return on such base.

The view of the directors was that the rates established on the "requirements" basis as now applied by the Board failed to yield a reasonable return. The so-called "requirements" as allowed for rate-making comprised an allowance for fixed charges apportioned to rail operations, an allowance for the actual dividends paid on the preference stock, a dividend from rail earnings of 5 per cent. on the par value of the ordinary stock, and an allowance for surplus. The directors felt that permissible earning power must be related more directly to investment in order to be reasonable and fair for rate-making purposes.

Last year the company spent \$47,000,000 on additions and improvements to railway properties, bringing the total since the end of the war to \$213,000,000. The demands now being made on the railways—and which were likely to grow with the mounting defence effort—placed a great strain on available facilities. The importance to the national welfare of a far-sighted policy with respect to the financial needs of the railways was therefore doubly emphasised. Net railway earnings in the first quarter of this year had increased \$4,700,000 over the same period of 1950. However, the comparison was with a period in 1950 adversely affected by unusually bad weather conditions. Despite some probable increases in traffic volume, it was clear that to maintain even the comparatively low level of net earnings of 1950, prompt and adequate increases in freight rates must be approved.

The report of the Royal Commission on transportation under the chairmanship of the Hon. W. F. A. Turgeon, was tabled in the House of Commons by the Minister of Transport on March 15. The report was the result of a comprehensive study of Canadian transportation and would undoubtedly take its place along with the reports of the Drayton-Acworth and the Duff Commission as one which would have an

important effect on the development of national transportation policy. The document represented an evaluation of contentions and proposals before the Commission by the many interests represented during hearings which took place over a year. It was gratifying that the Commission added another expression to those of the earlier reports that the company was an essential element of transportation and should continue as a privately-owned enterprise.

Freight Rates

A large part of the report was devoted to the equalisation of freight rates and related matters, and the C.P.R. made it clear that it believed in equalisation of the basic rate scales. Indeed, for some time past it had been at work preparing a plan for submission in the general freight rates inquiry. The problem was a difficult and complicated one, and it would not be easy to find a solution acceptable to all, for it must be remembered that equalisation involved increases as well as decreases in rates and that industry throughout Canada would be affected in one way or another.

One of the major difficulties faced by the railways was the competition offered by motor road transport. The fact that motor transport was largely under provincial jurisdiction removed this important subject from the direct purview of the Commission and hence a significant gap was inevitable in its findings. Road transport vehicles were not common carriers, but operated on public highways as relatively free agents, whereas the railways, as common carriers, were required to handle all types of traffic, at all times, without discrimination either in rates or service. The competition was therefore not on an even footing and it was difficult if not quite impossible for the railways to withstand increasing erosion of their high-class traffic.

One of the tasks assigned to the Commission was an examination of the capital structure and the fixed charges of the Canadian National Railways. Proposals advanced by the C.N.R. for reorganising its capitalisation constituted a serious threat to the ability of the C.P.R. to survive as a private enterprise. The principal danger of the plan as presented was that the reduced requirements of the C.N.R. might become the yardstick for judging the reasonableness of the rate level in disregard of the need of the C.P.R. for a fair rate of return. The report and accounts were adopted.

INTERNATIONAL TRADE CLUB FOR FESTIVAL OF BRITAIN.—An international luxury club for the entertainment of overseas business executives and buyers visiting the Festival of Britain has been opened. It is situated on an island site at the junction of Westminster Bridge Road and Lambeth Palace Road and conforms with the general design of the South Bank Exhibition. It provides facilities for travel, accommodation, and entertainment—booking and the services of interpreters and stenographers. The club is directly connected by telephone with the industrial information bureaux in the South Bank Exhibition. It also carries trade information supplied by the Festival authorities and other bodies, with details of all other Festival activities throughout Great Britain and Northern Ireland. In this connection it is hoped that factory visits will be made known to enquirers and that national bodies will be willing to accept enquiries from the club for re-routing to members. Factory visits can also be arranged through the official industrial information bureaux in the South Bank Exhibition.

Labour Relations on British Railways

Mr. John Benstead on the problems arising with the transfer of an industry from private to public ownership

Mr. John Benstead, Deputy Chairman, British Transport Commission, in a lecture delivered before the London School of Economics on May 8, chose as his subject the implementing of the Transport Act, 1947, with particular reference to labour relations, and at the outset pointed out that in broad pattern the B.T.C. had maintained the direct contact in staff relations existing before nationalisation came into effect, without instituting some kind of remote control. They had, however, endeavoured to broaden the field of usefulness by incorporating a wide measure of consultation on matters outside those of ordinary staff grievances.

Railway Staff Reductions

Mr. Benstead said that there was one main criticism levelled against the B.T.C., namely, that in particular on the railways it had allowed the staff to become unduly enlarged, and that, as compared with pre-war days, the railways were carrying many thousands of unnecessary staff. There was no lack of facts about the numbers of staff; indeed, the B.T.C. had from its inception set a standard in prompt and detailed publication every four weeks in *Transport Statistics*, and he knew of no other industry which disclosed its operation with so much frankness and detail.

Far from the British Railways staff growing, it had fallen by 60,000 between the middle of 1948 and the latest available 1951 figure. True, there was a fairly large number of unfilled vacancies as there was in 1948, but even after making every allowance for this factor, they could claim a real economy on establishment of over 40,000 employees. When comparisons were made with pre-war it must be remembered that the same detailed periodical statistics were not then available and reliance had to be put on an Annual Census of Railway Staff in one week.

Several points must be remembered in attempting comparison with pre-war years: first, the basis of the census then was staff at work equated to whole numbers in the census week, while today the basis was staff on the payroll; second, conditions of service had been greatly improved; third, volume of traffic moved was now bigger; fourth, heavy arrears of maintenance were being overtaken; and, finally, they could not meet traffic fluctuations by the employment of casual day-to-day labour as obtained in pre-war years. There were other alterations in the working conditions which called for extra staff, and overall it was estimated that the effect of the changes in working conditions, holidays, etc., compelled British Railways to employ 12½ per cent. additional staff, other things being equal.

The number of passengers on British Railways was lower than before the war, but the average distance travelled was greater, and the volume of passenger-miles was higher despite a reduction in passenger train-miles run of 15 per cent. Volume of freight transport moved by British Railways was one-third greater in 1950 than in 1938. The number of staff at the end of 1950 was naturally greater than before the war, without allowing for improved conditions of staff service, but if allowance was made for improved and other altered conditions of employment the staff was less.

One of the principal attractions of a career in transport before the war was its permanency, with a guaranteed week, and

the length of service of their employees and the family tradition was one of the prime characteristics of the pre-war railway companies. This in turn built up a body of responsible workers, the standard of whose work proved of such steady strength during the days of the war, whereas today, with more jobs offering than men, advantage of permanent employment was largely discounted.

There was the further problem also that transport employment differed from that in a productive factory in which incentive payments could be allied directly to production. Another important factor which militated against recruitment was the irregularity of hours and shift working and also the incidence of weekend working.

Probably their greatest disadvantage was that they could not outbid for labour and automatically pass on the increased cost to consumer. Before they could increase their charges, they had to secure authority from an independent tribunal, which could only be obtained after they had suffered the impact of increased prices from their suppliers. While this enquiry was taking place they continued to suffer the increases mentioned and thus inevitably worsened their financial position. He was satisfied, however, that with goodwill and a 100 per cent. co-operation from all concerned they could make public inland transport a success, and to this end they had made every effort to secure the help of the various trade unions.

Negotiation and Consultation

The first step of the British Transport Commission was to indicate to the unions that it desired to implement fully the Act both in regard to machinery for negotiation and for consultation. Negotiating machinery of long-standing character was already in operation on the main-line railways and London Transport and they had inaugurated new machinery to cover these sections where none previously existed. The whole basis of the selection of staff representatives was completely democratic, in that the railwaymen themselves could decide by secret ballot who should be their representatives.

In general they had not made any fundamental change in the machinery for dealing with wages and conditions of service and he was satisfied that it compared favourably with that obtaining in other industries. Whatever labour troubles they had, certainly could not have had their cause in the inadequacy of the machinery; often they had been due to the failure to use it. There was full opportunity for the presentation of fact and argument, and, given goodwill, there should never be any need for unofficial stoppages.

They had tried, however, to go beyond the generally accepted type of machinery of negotiation, and to take the representatives of the staff fully into their confidence. The B.T.C. therefore decided in the first place to set up the British Transport Joint Consultative Council consisting of the Members of the B.T.C. with appropriate member representatives from the six Executives and representatives of the various unions. The purpose of this council was to provide opportunities for the exchange of information and views on matters of common interest in relation to inland transport. At the highest level both

sides of the industry thus could consider frankly the finances and general wellbeing of the undertaking.

There were, however, differing conceptions of the functions of consultative machinery. The view was held strongly in some quarters that it meant "equal participation of the workers in management" which would carry with it the right to veto. The ideal of "workers control" could be easily put over, but, should it be put fully into practice in every depot and Region, this would inevitably result in paralysing delay. On the other hand, for consultative machinery to function and give confidence, equal if not greater impetus must come from management, who could easily be criticised for reaching conclusions before placing matters before the consultative machinery.

It would be seen that by joint consultation, adequate publicity, and suitable machinery for negotiation, they had endeavoured to provide the necessary links between staff and management. In addition, they had inaugurated schemes for education and training, and this was one of their first tasks. The Executives would use as far as possible the facilities already provided by the educational authorities. There had been for a considerable time fairly wide educational training facilities on many parts of their undertaking and many thousands of their staff took advantage of the facilities provided.

He would now turn to what was perhaps the most complicated of their tasks in relation to labour. It was their duty under the Act, not only to provide an adequate and economical system of inland transport, but also an integrated one. The principal difficulty one immediately confronted in the merging of large sections of staff was the disparity in rates of pay and conditions of service. The transfer of traffic from road to rail, or *vice versa*, or the merging of staffs, immediately raised questions of considerable complexity. While it was apparent that large-scale adjustments must be made, these staff problems of pay, redundancy, and so on, must be satisfactorily solved if integration was to succeed.

Wage Claims

Their principal problem had been that of meeting claims for increases in wages and salaries during a period when the financial position had been so difficult. He was sure that the majority of the staff would agree that the solution was not found by simply passing the whole burden on to the customers or accumulating deficits.

An undertaking rapidly becoming hopelessly insolvent would have sounded the death knell to the hopes of all those who believed in public ownership and there was a limit beyond which the law of diminishing returns negated any advantage from excessive fares and charges.

On the other hand, it was unreasonable that the staffs should be expected to bear in the form of low salaries and wages the impact of continually increasing costs of commodities from industries which were not subject to an inquiry procedure in respect of their charges, and whose staffs might enjoy rates of pay and conditions superior to those in transport. Provided they could demonstrate that they were efficient, prepared to throw overboard traditional restrictive practices, and eliminate waste in manpower and material, staffs in public services should be treated on a reasonable parity with those in private enterprise.

Permanent Way Institution

Programme of 1951 summer convention at The Hague

The annual summer convention of the Permanent Way Institution will be held at The Hague under the Presidency of Lt.-Colonel H. B. Everard from May 18-23. The Institution is indebted to Mr. F. Q. den Hollander, President of the Netherlands Railways, for the arrangements for the visit.

On Friday afternoon, May 18, while the ladies will participate in a bus tour of the city and visit the Peace Palace and other places of interest, members will attend the annual general summer meeting at the Diligentia Concert Hall. Mr. J. L. A. Cuperus, Chief Civil Engineer, Netherlands Railways, will then give a talk illustrated by films and lantern slides on civil engineering works on the Netherlands Railways after the war.

Record Attendance

The summer dinner and dance is to be held in the Kursaal at the Hotel Kurhaus, Scheveningen, at 7 p.m. for 7.30 p.m., on the Friday evening, with Lt.-Colonel Everard presiding over the largest assembly of members and their friends yet seen at any P.W.I. function.

Among the guests who have indicated they will be present are:—

Sir Philip B. B. Nichols, British Ambassador at The Hague; Messrs. F. M. Schokking, Burgomaster of The Hague; D. G. W. Stutzen, Secretary-General of the Ministry of Transport; H. van Galen Last, Director-General of Transport, The Hague; F. Q. den Hollander; D. J. Wansink, General Manager, Netherlands Railways; J. L. A. Cuperus, Chief Civil Engineer, Way & Works, Netherlands Railways; A. J. Rosman, ex-Secretary-General of the Ministry of Transport; T. W. Mundi, Retired Chief Engineer, Netherlands Railways; K. H. C. W. van der Veen, Divisional Engineer, Netherlands Railways, Rotterdam; B. van Bilderbeek, Personal Assistant to Chief Civil Engineer, Netherlands Railways.

Messrs. J. C. L. Train, J. Taylor Thompson, J. I. Campbell, and C. E. R. Sherrington are among those from Great Britain who have indicated their intention of attending.

Alternative visits have been arranged for May 19 to (1) Gouda to inspect the strengthening of the track and road bed and the town and church, famed for its stained glass windows, and (2) to Rotterdam for a technical bridge inspection by boat through the waterways.

On Sunday ladies and members will leave by special train for Alkmaar from which point they will proceed by bus to the Enclosing Dam and to the gap made in the Polder Dyke which led to the inundation of the North West Polder. Lunch will be at Middenmeer and the bus journey continued to Enkhuizen. From here the party will proceed by steamer with 200 representatives of the Netherlands Railways, to Amsterdam.

On Monday morning the ladies will visit Amsterdam, Volendam, and Marken, while members will travel to Ymuiden to visit the Royal Dutch Blast Furnaces & Steelworks. Afterwards, Mr. T. W. Mundi, Chief Civil Engineer, Netherlands Railways, will give a short paper on new types of F.B. rail fastenings. Members will proceed to Amsterdam travelling by boat through the locks into the North Sea Canal and by the courtesy of the Royal Dutch Blast Furnaces & Steelworks lunch will be served on board. Before joining the ladies in Amsterdam members will go by train to inspect the

special type track installed near Weesp.

Two alternative visits have been arranged for members on May 22. One party will travel by special train to Eindhoven from which point they will be conveyed by buses to the works of Philips Electrical Limited where, after inspecting the jubilee exhibition of products, a tour of one of the factories will be made.

The second party of members will travel by special train to Hengelo to inspect the station under construction and to Enschede to inspect the new pre-fabricated concrete station. Meanwhile, ladies will travel by bus from Apeldoorn to visit the Airborne Cemetery near Arnhem, thence through the National Park, The Hoge Veluwe, to the Kröller-Müller Museum. In the evening the party will be received by the Burgomaster of The Hague.

Three visits have been arranged by bus for May 23. Ladies will go to Aalsmeer to see the flower auction and market and some of the members to Rotterdam to inspect railway construction works, war damage, and the road tunnel under the River Maas. The remaining members will visit Leiden to inspect the new station construction works.

At 1 p.m. the buses will converge on the Hotel Oud Wassenaar, near The Hague, where Mr. F. Q. den Hollander has arranged for a farewell party. The majority of the members will return to England on the night of May 23 via the Hook of Holland travelling by special train from The Hague at about 9 p.m.

The Institution has expressed its indebtedness to Mr. J. L. A. Cuperus and to his Personal Assistant, Mr. B. van Bilderbeek, for their interest and arrangements programmed for the benefit of those taking part.

S.R. Debating Society Visit to Switzerland

A party of some 105 members of British Railways, Southern Region, Lecture & Debating Society, left Victoria Station yesterday, May 10, for a tour of Switzerland. After travelling via Folkestone-Calais, the party arrived at Basle early this morning and proceeded from there to Brunnén, which will be its centre for the first part of the tour. On May 12 there will be a visit to Andermatt with opportunities for observation of the traffic facilities at Brunnén Station, the loading of cars for transit through the St. Gotthard Tunnel at Göschenen, and the Amsteg power station. As an alternative to the visits to railway installations, sightseeing tours have been arranged on a number of days to cater for ladies taking part in the tour.

Members will be free to make their own arrangements on Sunday, May 13, and the following day will leave for Zurich. On Tuesday the party will divide so that visits may be made to either Zurich Station, or the Brown-Boveri works at Baden, and the two sections will rejoin at Basle.

The principal activities on Wednesday will be an inspection of the station estate and bonded warehouse at Dreispitz, the Wolf goods depot, and Muttentz marshalling yard, all of which are in the vicinity of Basle. Departure from Basle will be shortly after midnight on May 16-17, and the return to London will be via Calais-Folkestone.

Parliamentary Notes

British Transport Commission Bill

The Select Committee of the House of Commons which considered the British Transport Commission Bill on April 10, 11, and 12, has reported the Bill, as amended, to the House.

Mr. S. Cope Morgan, K.C., who with Mr. Harold Marnham appeared for the promoters of the Bill, said that the British Transport Commission was not at the moment electrifying the line to Southend either directly or through Tilbury. There was a good deal of preliminary work to be done before that could be carried out, and they were concerned in the Bill with two matters; one dealt with the marshalling of freight traffic and the other was the question of a stabling place for rolling stock in the Southend area.

The consequential necessities of the electrification scheme were two-fold. First, it meant that they must have improved marshalling yards to deal particularly with the freight traffic; second, they wanted a proper terminal stabling depot for the new rolling stock which implied going down to Southend for it because the traffic started there in the day. They proposed to concentrate the marshalling in Ripple Lane because the transactions would be free of the passenger line running direct north of Ripple Lane from Fenchurch Street to Southend.

The proposal would enable them to eliminate the two marshalling yards at Plaistow, which were severely handicapped by passenger traffic on the main line, and it would release Little Ilford for the stabling of the new rolling stock for passenger traffic.

Mr. A. R. Dunbar, Divisional Operating Superintendent (Eastern), Eastern Region, said that one of the purposes of the scheme was to reorganise and improve the facilities for goods traffic in what was known as the Southend District. He gave a detailed explanation of the proposals in the Bill and the advantages that would flow from the setting up of the new marshalling yard.

Sir Malcolm Trustam Eve, K.C., for Barking Corporation, said that the promoters had proved, and they had never disputed it, that there was a strong case for new marshalling arrangements on the Tilbury loop, and by new marshalling arrangements they also agreed that it would be wise to have one marshalling yard. The need for a marshalling yard somewhere in the area at some time had been proved, but he submitted that a case had not been established for it this year on the land proposed, or of the size proposed.

After consulting in private the Chairman said the committee was unanimous in the view that the better plan in this case would be for consultative relations to be re-established.

Mr. Cope Morgan then dealt with the proposals to carry out alterations and improvements of the railway between Southend and Shoeburyness and the objections of the Southend Corporation to them.

Mr. A. R. Dunbar, recalled, said that the powers sought were required in connection with the electrification scheme. The land would be used, if they obtained it, for making a depot for stabling and servicing electric trains. There could be no doubt that electrification, as they planned it, would give a substantial improvement in the train service.

In the high peak hour from London from 5 p.m. to 5.59 p.m. they planned to have 17 electric trains leaving for the Southend-Shoeburyness direct route as

compared with eight trains at present. Of those 17 electric trains 15 would go right into Southend and the other two would terminate just before entering the borough. That was compared with a service in that hour of eight steam trains at present. In the next hour they proposed to have nine trains for the Southend line compared with the five steam trains now running. In general they intended approximately to double the number of trains.

Questioned by Mr. G. R. Rougier, for Southend Corporation, Mr. Dunbar said the electrification scheme from start to finish would undoubtedly take some years. The increase between two trains and four trains did not mean that double the amount of traffic would be carried. The seating capacity would be rather less, but the conditions would be more comfortable.

Mr. Rougier said that the corporation was claiming compensation for adverse disturbance of that territory which the corporation had in the borough.

After considering in private the Chairman announced that the Committee had decided that, while appreciating the public-spirited manner in which the borough had endeavoured to meet the requirements of the B.T.C. in that area, it could not feel that it had made good the petition addressed to it.

The Committee made several amendments to the Bill, which passed the report stage in the House of Commons on April 24, and was read the third time and passed on April 27.

Questions in Parliament

Railway Passenger Fares

Major J. A. Boyd-Carpenter (Kingston-upon-Thames—C.) on April 30 asked the Minister of Transport whether he would give an assurance that he would not assent to any further fare increase until the House had had the opportunity to consider them.

Mr. Alfred Barnes: The B.T.C. has not sought my authority for higher railway passenger fares. They have, however, submitted to the Transport Tribunal, for confirmation under the Transport Act a draft scheme for all passenger fares on London Transport and British Railways. If confirmed by the Tribunal, it will be brought into force by an Order of the Tribunal and will not require to be approved by Parliament or by me.

Major Boyd-Carpenter: Whatever the technical position may be, a further increase in passenger fares, only a year after the last, would be of the greatest public importance. In those circumstances, should not the Minister give an assurance that he will exercise his powers to prevent any such increase unless and until the House has approved it?

Mr. Barnes: It is something much more than a technical matter. Parliament laid this responsibility clearly on the Tribunal, and removed it from the jurisdiction of the Minister. The procedure for investigation here is much more thorough and complete than that which exists respecting any rise that takes place in the cost of any other services or commodities.

Captain Peter Thorneycroft (Monmouth—C.): On the constitutional point, having regard to the fact that no question—of any importance—about the conduct of transport can be asked in the House, is the Minister giving further consideration, which he promised, to the suggestion that there should be a full inquiry into the administration and economics of the railways before any further increases are made?

Mr. Barnes: During the last two or three years there have been many full-dress debates on this subject.

Mr. C. L. Hale (West Oldham—Lab.): While, by statute, responsibility is laid on the Tribunal to consider the commercial aspect of the fares, the question of whether passenger fares should be subsidised by the State is a matter for the consideration of the House.

Mr. Barnes: If Parliament wishes at any time to deal with the matter it would not deal with it in the form suggested at the moment.

British Transport Commission's Report

Mr. David Renton (Huntingdon—Lib. Nat., Con.) on April 23 asked the Minister of Transport whether he would ensure that the annual report for 1950 of the British Transport Commission was printed and available by July 13, 1951.

Mr. Alfred Barnes, in a written answer, stated: The Commission hopes that the report will be available early in July.

Retired Railwaymen's Superannuation

Captain R. E. D. Ryder (Merton and Morden—Con.) on April 23 asked the Minister of Transport if he was aware of the decreased value of the superannuation allowances paid to retired railway clerks due to the rising cost of living; and whether he would institute an investigation into the matter.

Mr. Alfred Barnes (Minister of Transport): I am aware of the effect of rising prices on those living on fixed incomes, but if an investigation were undertaken it would be a matter for the British Transport Commission, and not for me.

Captain Ryder: I am not clear whether the Minister holds himself responsible for the welfare of these employees of the railways or not, but if the whole of the assets of the railways are taken over, should not the liabilities also be taken over?

Mr. Barnes: I would remind Captain Ryder that these funds are already in heavy deficit, but in any case, it is a matter for the B.T.C.

Mr. David Renton (Huntingdon—Lib. Nat., Con.): When the Minister says that this is a matter for the B.T.C. to determine, does he ignore the pledges he gave when the Transport Bill was before the House, that those whose superannuation funds were taken over from the former railway companies would have their pensions adequately protected?

Mr. Barnes: Mr. Renton is wrong. I said that they would be protected as they were taken over, but this suggests an alteration. They have been fully safeguarded as they prevailed at the time the B.T.C. took over.

Sir John Mellor (Sutton Coldfield—Con.): How can the Minister repudiate the responsibility for this matter when about 18 months ago he debated it with me at some length on the adjournment?

Mr. Barnes: Whenever a matter affecting transport is raised in the House, I have to put the case of the B.T.C., but it does not affect the position that if any adjustment is to be made in this matter it is their responsibility.

Mr. James Harrison (East Nottingham—Lab.): Will the Minister consider increasing the freight rate from 10 to 12 per cent. to meet additional pensions for these people?

Mr. Barnes: That appears to me to be another matter.

Captain Ryder: Would the Minister also represent the case of the railway superannuitants to the Transport Commission?

Mr. Barnes did not reply.

Contracts & Tenders

The Egyptian Government has recently placed a contract with the Steel Company of Wales Limited for 450,000 steel sleepers.

The first and second paragraphs of an item referring to British Insulated Callender's Construction Co. Ltd., which appeared in this column last week, were transposed. The additional details of work in hand at the company's Traction Contracts Department at Kirkby, near Liverpool, should follow the reference to the contract for the design, supply and installation of overhead equipment for the electrification of the Parramatta and Lithgow section of the New South Wales Government Railways, which has been placed with British Insulated Callender's Construction Co. Ltd.

The Board of Trade, Commercial Relations & Exports Department, Special Register Information Service recently stated that the First Secretary (Commercial) at Montevideo has reported the issue of a call for tenders (Specification C.M. 138) by the Ferrocarril Central del Uruguay for: Mandrels, or chucks for locomotive tubes for enlarging tubes $\frac{1}{2}$ in. to $\frac{3}{4}$ in. thick (24 of various sizes); machine knives (19 of various types); taps for screw-plates (54 sets in four sizes); stay-plates (10 various

sizes) and stays (2). Tenders must be lodged with the Administracion del Ferrocarril Central del Uruguay, Calle La Paz 1095, Ciudad, by May 29, 1951. A copy of the specification (in Spanish) showing sizes and quantities of the appliances required, with drawing, may be seen by representatives of United Kingdom firms at the Board of Trade, Commercial Relations & Exports Department, S.W.1. Reference C.R.E. (IB) 59546/51.

A further report from Montevideo states that a call for tenders has been issued by the Ferrocarril Central del Uruguay for the supply of 16 motor rail trolleys and 32 trailers for these trolleys. Tenders should reach Ciudad not later than 3 p.m. on June 5, 1951. A copy of the Specification No. C.M. 139 (in Spanish), together with a copy of the drawing, is available for inspection by representatives of United Kingdom manufacturers at the Commercial Relations & Exports Department, Board of Trade, S.W.1. Reference C.R.E. (IB) 60091/51.

The United Kingdom Trade Commissioner at Brisbane has reported that the Queensland Government Railways have issued a call for tenders for the supply of 12 diesel-electric locomotives. Tenders should reach the Secretary to the Commissioner for Railways, Adelaide Street,

Brisbane, before 2.30 p.m. on July 16, 1951. A copy of the tender documents and drawing is available for inspection by representatives of United Kingdom manufacturers at the Commercial Relations & Exports Department, Board of Trade, and additional copies of the documents may be obtained from the Agent-General for Queensland, 409, Strand, London.

NORTH EASTERN REGION CUP FINAL SPECIALS.—For the F.A. Cup Final between Newcastle United and Blackpool, at Wembley on April 26, the North Eastern Region ran 18 special trains. The 16 trains which ran from Tyneside carried 7,675 passengers.

WESTERN REGION ARTS & CRAFTS EXHIBITION.—Oil paintings, water colours, pictorial photographs, embroidery work, wood and metal models, were among the 660 entries received for the 16th Annual Arts & Crafts Exhibition organised by British Railways, Western Region, Staff Association, at the Town Hall, Swindon, between April 30 and May 3. A Special Award of Honour was given for the most meritorious entry and other prizes consisting of silver cups, trophies, plaques, medallions and certificates of merit, were presented by Mr. K. J. Cook, Mechanical & Electrical Engineer, Western Region.

South Bank Exhibition Opened



The Royal party inspecting transport exhibits at the South Bank Exhibition in London, opened by the King on May 4. (See editorial article in our May 4 issue)

Notes and News

Inspecting Engineer Required.—Applications are invited for the post of an inspecting engineer with a firm of consulting engineers for traction and other electrical work. See Official Notices on page 543.

Mechanical Engineer Required.—A mechanical engineer between 35 and 40 years of age, is required. Selected applicant is to train for general manager now, with intention of directorship. See Official Notices on page 543.

B.T.H. Newcastle District Office.—As from May 16, the Newcastle-on-Tyne district office of the British Thomson-Houston Co. Ltd. will be in more commodious premises at 9, Higham Place, Newcastle-on-Tyne, 1. The telephone number remains Newcastle 25040 as for the former offices in Ellison Place.

Imperial Chemical Industries Limited.—The directors of Imperial Chemical Industries Limited have decided to recommend a final dividend on the £60,558,139 ordinary capital of 9 per cent., less tax, making, with the interim of 3 per cent., a total of 12 per cent. for 1950. For 1949, there was a final dividend of 7 per cent., to make a total of 10 per cent., less tax. A record group profit, before tax but after charging depreciation, of £31,018,457 is announced. This compares with £17,323,509 in 1949 and exceeds the previous record of £22,955,579 in 1948. The group profit is also the highest recorded by any British industrial undertaking.

British Railways, London Midland Region (London) Dramatic Society.—On May 2, 3, 4, and 5, the British Railways, London Midland Region (London) Dramatic Society, presented "Dear Octopus," a comedy in three acts by Dodie Smith, at the Rudolf Steiner Theatre, London, N.W.1. The acting was of the high standard now expected from this talented Society, and the production of the play was skilfully handled by Hilda Pendrell. Sympathetic performances were given by Beckie Pass as Dora Randolph and Margaret Kirby as Grace Fenning, Dora's

companion. Reginald Barker was excellent in the part of Nicholas Randolph, but it is difficult to single out one player as better than another; they were all good in their respective parts. Mention might, however, be made of the performances given by the grandchildren, particularly that of Barry Brockwell as Bill.

Road Haulage Executive Staff College at Watford.—Lord Hurcomb, Chairman of the British Transport Commission, will formally open the Road Haulage Executive Staff College at Watford on Thursday, May 24.

Stabilisers for British Railways Irish Mailboats.—British Railways, London Midland Region, m.v. *Cambria* left Holyhead on the morning of May 8 fitted with stabilisers. These will reduce her biggest roll to no more than two or three degrees. *Hibernia*, sister vessel of the *Cambria*, will also be equipped with stabilisers in time for the summer season.

Tube Investments Limited: Dividend.—At a meeting of the board of Tube Investments Limited on May 2 dividends were declared as follow: on the 7 per cent. first preference stock at the authorised rate for the period to April 30; on the 4½ per cent. redeemable cumulative preference stock, £1 13s. 8d. per cent., less income tax, the amount due for the period to May 31, 1951, at 4½ per cent. per annum on the two payments made on January 6 and January 24; on the ordinary stock, an interim dividend of 12½ per cent., actual, less income tax, for the year ending August 4.

Southampton Shipping & Industries Exhibition.—The Southampton Shipping & Industries Exhibition will be officially inaugurated by the Earl Mountbatten of Burma at 12 noon on June 30. The exhibition, which will be open until July 14, is creating considerable interest, and promises to be one of the "highlights" of the Festival of Britain activities at Southampton. Mr. R. P. Biddle, Docks & Marine Manager, is Chairman of the organising committee. Each phase of industry in the district will be represented and models by

every shipping company associated with the port—including the large model of the *Queen Mary*—will be on view. House flags of all shipping lines using Southampton Docks will decorate the Hall of Shipping.

Festival of Britain: Map of London Underground Facilities.—The London Transport Executive has published a poster in the form of a map of London showing access by London Transport railways and British Railways to the South Bank Exhibition and the sites of other Festival activities in London.

Closing of Branch Lines: Welwyn Garden City and Hertford North.—As from June 18 the passenger train services will be withdrawn between Welwyn Garden City and Hertford North. Cole Green and Hertingfordbury Stations will be closed to passenger train traffic. A London Transport Executive bus service will operate between Welwyn Garden City and Hertford and serve Cole Green and Hertingfordbury. Cartage services for parcels traffic will operate from Hatfield for Cole Green and from Hertford East for Hertingfordbury.

Double-Deck Bus Excursions on Sundays and Bank Holidays.—A new scheme for Sunday and Bank holiday double-deck bus excursions to be launched at Whitsun will enable Londoners to book seats in advance on 28 special London Transport routes. These services will cover some 2,000 miles of route and will provide direct links from the suburbs to places hitherto reached only after fairly long cross-country journeys. Most excursions will start at 11.30 a.m. and 2.30 p.m. and return in the evening. Seats will be guaranteed on outward and return journeys.

Scottish Region Stations Closed.—As from May 7 passenger train services have been withdrawn from Palmure Station, on the Newton Stewart-Castle Douglas line, Scottish Region, though parcels and miscellaneous traffic and traffic by freight train will continue to be dealt with there. From the same date the passenger train service has been withdrawn from the Barnton Branch, Midlothian. Parcels and miscellaneous traffic for House O'Hill, Davidson's Mains, and Barnton, will be dealt with at Craigleith by a collection and delivery service operating from that station. Barnton goods depot will be closed, but Davidson's Mains goods depot will be retained for full truck load traffic.

L.M.R. Ambulance Competition Finals.—Mr. J. W. Watkins, Chief Regional Officer, London Midland Region, was present at the finals of the London Midland Region ambulance competition, held at Belle Vue Gardens, Manchester, on May 4. The chair was taken by Mr. R. Simpson, Regional Staff Officer, and the Challenge Shield and prizes were presented by Mrs. Simpson. The total marks possible were 500, and the results as follows: Wolverton (A), 356; Wyre Dock, 350; Crewe Works Machine Shop (A), 337½; Derby C.M.E. Boiler Shop (B), 325; Derby C.M.E. Erecting Shop (B), 319½; Camden (A), 317½; Mold Junction Motive Power, 303½; St. Pancras, 299; Kettering, 289½.

Western Region Whitsun Services.—Arrangements made by the Western Region for Whitsun holiday travel include over 230 extra main-line trains during the period May 11 to May 15. It is anticipated that passenger traffic out of London will be heavy today, May 11, when a total of 29

Mr. John Elliot's Departure for U.S.A.



Mrs. Elliot, Miss Elliot, Mr. John Elliot, Chairman, Railway Executive, Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, and Mr. S. W. Smart, Superintendent of Operation, Southern Region, at Waterloo Station before Mr. Elliot's departure for the United States on May 2 (see paragraph in the Personal Columns of our May 4 issue)

OFFICIAL NOTICES

GENERAL MANAGER.—Wanted, a Mechanical Engineer with degree qualifications and public or grammar school education. Actual manufacturing production in medium weight engineering works required. Some commercial experience desirable and preferably with knowledge of railway requirements. Selected applicant is to train for General Manager now, with intention of Directorship. Suitable age 35/40. Applicants please state education, managerial and production experience and salary at last post.—Apply Box 78, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with international traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

APPLICATIONS are invited for the post of an Inspecting Engineer with a firm of Consulting Engineers for traction and other electrical work. Candidates should possess Higher National Certificate or its equivalent and they will be required to work from the Manchester area. Applications should be made in writing, stating age, qualifications, and salary required to Box 75, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

SENIOR DRAUGHTSMAN required in Midlands familiar with railway permanent way layouts, etc. Experience with British Railways an advantage. State age, experience, and salary required.—Box 66, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

JUNIOR Traffic Officials with railway traffic apprenticeship experience. Age about 25, single, required for service on railways in Peru and Bolivia. Apply to the Secretary of **THE PERUVIAN CORPORATION LIMITED**, 144, Leadenhall Street, London, E.C.3.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The commercial timbers, their qualities and uses, tools and wood-working equipment, are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

additional trains will leave Paddington for the West of England, South Wales and the Midlands. Arrangements whereby seats can be reserved on specified trains will operate and this facility is being extended to certain of the extra trains on May 11 and 12. No alteration will be made to the normal advertised steamer services between Fishguard Harbour and Southern Ireland and between Weymouth and the Channel Islands.

April Steel Output.—The production of steel ingots and castings was at an annual rate of 16,771,000 tons in April, as compared with a rate of 16,546,000 tons in March, and 16,822,000 in April, 1950. Pig-iron production was at an annual rate of 9,280,000 tons, against 9,572,000 tons in the previous month, and 9,492,000 tons in April, 1950.

Diesel Locomotives at National Colliery Managers' Conference.—The Locomotive Manufacturers' Association of Great Britain is exhibiting a number of diesel locomotives for underground use in mines, at the National Colliery Managers' Conference, which opened at Harrogate on May 9 and will close today, May 11. On May 9 the Locomotive Manufacturers' Association entertained the Mayor of Harrogate and various officials to luncheon and in the evening gave a cocktail party for all delegates. The conference was attended by Mr. John Vaughan, Director of the L.M.A.

Nationalising the Cuban Railways.—As forecast in an editorial article on the Cuban railways in our March 16 issue, the President of Cuba is to ask the Cuban Congress to nationalise the British-owned United Railways of Havana. His hand has been forced by rival strikes—one by port workers, who wanted the suppression of the railway wagon ferry service between Havana and the United States, and the other railwaymen who wanted it to continue. The railway union leaders met the President with a demand for nationalisation of the United Railways and resumption of the ferry. They agreed to resume work when the President offered to draft a message to Congress asking for nationalisation of the railway.

"Tulip Time Express" to Clacton-on-Sea.—In connection with the special display of tulip bulbs laid out at Clacton-on-Sea, the Eastern Region ran a special buffet-car train named the "Tulip Time Express" from Liverpool Street to Clacton on May 4. The train was sent off by Mr. Michael Howard, the radio star, and Miss Peggy Evans, the film star, and among the Eastern Region Officers present were: Messrs. C. K. Bird, Chief Regional Officer; C. G. G. Dandridge, Commercial Superin-

tendent; A. R. Dunbar, Divisional Operating Superintendent (Eastern); L. P. Parker, Motive Power Superintendent. The train ran for one weekend only and returned from Clacton-on-Sea on May 6.

Demolition of Dunford Bridge Station Buildings, Eastern Region.—A commencement has been made with the demolition of the station building on the down platform of Dunford Bridge Station in the West Riding of Yorkshire to make way for the rail approach to Woodhead New Tunnel. The station offices have been transferred to temporary premises erected on the up platform.

Vulcan Foundry Limited.—The accounts of the Vulcan Foundry Limited for the year ended December 31, 1950, show that the parent company in 1950 made a profit, before taxation, amounting to £363,362 as compared with £274,149 in 1949. After providing a sum of £206,378 for taxation on the profit for the year and £5,000 for taxation equalisation reserve, there remains for disposal a net profit of £151,984, which is an increase of £32,721 over last year. General reserve has been increased by the appropriation of £80,000; £10,000 has been allocated to the reserve for pensions; and £15,000 to welfare. The directors recommend a dividend of 7 per cent.

and a bonus of 2 per cent. for the year. Balance carried forward is increased by £4,303 to £58,604.

London Midland Region Whitsun Trains.—Between May 10 and 16 inclusive the London Midland Region of British Railways is running 876 extra main-line express trains for Whitsun holidaymakers. There will be 85 extras out of, and 114 into, Euston, and 47 from and to St. Pancras.

Aluminium Development Association.—The annual general meeting of the Aluminium Development Association was held on April 20. Mr. Austyn Reynolds was elected President for the coming year. Mr. Reynolds is a Director of Tube Investments Limited and Deputy-Chairman of T.I. Aluminium Limited and associated aluminium companies. At the meeting the retiring President, Mr. E. Player, presented the annual report, drawing particular attention to those activities of the Association linked with the long-term development of aluminium in the major engineering industries.

Scottish Region Runabout Tickets.—Holiday "runabout" tickets have now been introduced by the Scottish Region for the 1951 season. This summer the

L.M.R. Women's Ambulance Competition



Mr. J. W. Watkins, Chief Regional Officer, London Midland Region, presenting the L.M.R. cup won by the Horwich Accounts Women's Ambulance Team for the second successive year. On the left of Mr. Watkins are Mr. R. Simpson, Regional Staff Officer, and Dr. H. H. Cavendish Fuller, Chief Medical Officer, Railway Executive

tickets will be issued in 20 holiday districts as compared with seven two years ago and 19 last year. An innovation is that the tickets are being issued on any day of the week and will be valid for seven consecutive days. First class runabout tickets are being issued this summer for the first time since the war. Tickets range in price from 15s. in the case of Oban and the Land of Lorne to 35s. for ticket covering Glasgow and Paisley and all Clyde Coast piers.

B.E.T. Omnibus Services Limited.—This year B.E.T. Omnibus Services Limited is maintaining the final dividend on the £2,000,000 ordinary capital at 7 per cent., making with the unchanged interim 12 per cent., tax free, for the year ended March 31, the same as for the previous year. The net profit, after providing £329,409, against £338,056, for tax, was £401,760, against £411,618.

Eastern Region Whitsun Train Services.—During the seven days commencing yesterday, May 10, and ending on May 16, the Eastern Region is running 350 additional trains to cater for the Whitsun holiday period. Included in these totals are many additional trains from London serving the West Riding of Yorkshire, Newcastle, Edinburgh and Aberdeen, as well as the principal towns in East Anglia. The "Queen of Scots Pullman," the "Yorkshire Pullman," and the "Tees-Tyne Pullman" trains from Kings Cross will not run on May 14.

New Quarry Type Bucket Mechanical Loader.—The firm of E. Boydell & Co. Ltd. announces the addition of a quarry type bucket to the range of accessories for its mechanical loader. The bucket is of a reinforced pattern, and is equipped with four teeth of cast manganese steel, which enable the loader to penetrate and load stone blasted from the quarry face up to 15 in. In the medium or small quarry, in addition to excavating, the bucket can be used for loading from stockpiles, and will clean the quarry floor, the versatility of the machine ensuring that the crushing plant is kept at full production.

Forthcoming Meetings

- May 17 (Thu.).—Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. Annual general meeting for Corporate Members and Associates only.
- May 18 (Fri.) to 23 (Wed.).—Permanent Way Institution, annual summer convention at the Hague, Holland.
- May 18 (Fri.) to 23 (Wed.).—Railway Students' Association, London School of Economics & Political Science, annual convention in Paris.
- May 19 (Sat.).—Irish Railway Record Society, visit to Dundalk Works, G.N.R. (I.).
- May 22 (Tue.) to 24 (Thu.).—Institution of Locomotive Engineers, summer meeting.
- May 23 (Wed.).—Road Haulage Association annual luncheon at Grosvenor House, Park Lane, London, W.1, at 12.30 for 1 p.m. Principal guest, Viscount Swinton.
- May 23 (Wed.).—Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. "Hydro-Electric Power Development in Scotland", by Sir Edward MacColl.

Railway Stock Market

Markets opened this week on a less buoyant note, but substantial business was again transacted with the emphasis on industrial shares, stimulated afresh by expectations that important company results due over the next few weeks will include many dividend increases. Nevertheless some share values are approaching levels which already discount higher dividend hopes; and there is the danger that if these are not borne out, some shares may react sharply after recent considerable gains.

Industrials are now at their highest since 1947 and fast approaching their peak levels since the war. Consequently, after the upward rush in values since the Budget, buying probably will tend to become much more selective. Rising costs and shortages of materials, must, it seems, affect some companies much more than others. The chief sufferers will be those not prominent either in rearmament work or export trade, though in many cases the effect on earnings of shortages and costs will probably not reduce earnings of home trade companies to any marked extent for some time to come.

Foreign rails attracted only a moderate business, though quiet buying was reported of some stocks which still have market prices below the estimated take-over values.

United of Havana stocks strengthened on revival of nationalisation possibilities. If this were effected on a fair and equitable basis, the company's various stocks should be worth more than their current low levels; but it is quite impossible to assess the intentions of the Cuban authorities. Consequently there has been no strong buying of the stocks, which must continue to be regarded as carrying speculative risk until more definite information is available. The chief attention has been given to the 1906 debentures, which at the time of going to press have firmed up to 19½. These debentures are estimated in some quarters to be worth nearer 30 than 20 if a nationalisation take-over were made on an equitable basis.

There has been a little selling of Leopoldina stocks by holders tired of waiting for completion of the take-over and the payouts for the various stocks. The ordinary was 10½, the preference eased to 26½, the 4 per cent. debentures to 94½, and the 6½ per cent. debentures to 140. Leopoldina

Terminal 5 per cent. debentures were lower at 93½, and the Leopoldina Terminal ordinary units 1s. 4½d.

Ahtofagasta ordinary was 7½; the preference stock moved fractionally lower at 52½. Nitrate Rails were 23s., and Taltal 18s. 3d. San Paulo 10s. units lost a few pence at 14s. 6d. La Guaira ordinary stock was 84½, and Bolivar "C" debentures 58. Manila "A" bonds and preference shares were 72½ and 7s. respectively. Costa Rica ordinary have marked up to 4½, and Chillon Northern 5 per cent. first debentures are at 43½.

Canadian Pacific remained an active feature, but at 57½ have not held best levels. The 4 per cent. preference stock was 74½ and the 4 per cent. debentures 96xd.

Road transport shares have been quiet, although Lancashire Transport strengthened to 60s. Southdown were 102s. 6d., West Riding 55s., and Provincial Traction 4s. shares marked 7s. 6d. B.E.T. deferred stock has been rather more active around £540 following market talk of higher dividend prospects.

Guest Keen have risen to 63s. 4½d. in response to the increased profits, higher dividend, and the 5s., tax free, special payment. The latter is provided by £3,400,000 of the compensation for nationalised steel assets. Cammell Laird 5s. units have been active around 15s. 6d. and Vickers were 53s. 9d., though the question of a special return to shareholders of the two companies from compensation for English Steel nationalisation may have to await completion of negotiations for the "hiving-off" of certain of the English Steel assets. Babcock & Wilcox have risen to 81s. 6d. in response to record earnings and higher dividend. T. W. Ward, on market hopes of an increased dividend, have been marked up further to 77s.

Locomotive builders, and engineers' shares generally remained steady, largely because of the good impression created by the important results that have come to hand in recent weeks. Birmingham Carriage rose to 40s. 6d., Hurst Nelson were 62s. at Glasgow, while Vulcan Foundry at 31s. 6d. responded to the full results and chairman's annual statement. English Electric moved up to 73s. 6d. Beyer Peacock were 32s. 3d., North British Locomotive 19s. 4½d., and Gloucester Wagon 17s. 1½d. Wagon Repairs 5s. shares were 15s. 10½d. and Charles Roberts 101s.

Traffic Table of Overseas and Foreign Railways

Railway	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date	
			Total this year	Inc. or dec. compared with 1949-50		Total 1950-51	Increase or decrease
South & Cen. America	Antofagasta ...	811	27.4.51	£ 161,690	17	£ 1,783,350	£ 702,420
	Costa Rica ...	281	Mar., 1951	c462,742	39	c8,838,481	c1,242,019
	Dorada ...	70	Mar., 1951	34,235	13	108,108	18,363
	Inter. Ctl. Amer. ...	794	Mar., 1951	\$1,204,336	13	\$3,753,109	\$25,546
	Paraguay Cent. ...	274	27.4.51	\$251,604	42	\$7,816,786	\$2,534,450
	Peru Corp. ...	1,050	Mar., 1951	\$7,903,000	39	\$69,671,000	\$15,273,942
	" (Bolivian Section)	66	Mar., 1951	Bs. 14,210,000	39	Bs. 110,467,000	Bs. 23,120,336
	Salvador ...	100	Mar., 1951	c236,000	39	c1,563,000	c87,000
	Taltal ...	154	Mar., 1951	\$2,091,357	39	\$14,689,148	\$2,461,284
				\$308,104	39		
Canada	Canadian National†	23,473	Mar., 1951	17,554,000	13	47,640,000	8,750,000
	Canadian Pacific†	17,037	Mar., 1951	11,502,000	13	32,736,000	5,010,000
Various	Barsi Light* ...	167	Mar., 1951	33,150	52	350,745	3,225
	Egyptian Delta ...	607	10.10.50	18,245	28	319,911	24,005
	Gold Coast ...	536	Feb., 1951	277,776	48	2,852,499	303,619
	Mid. of W. Australia	277	Feb., 1951	39,170	35	316,384	74,289
	South Africa ...	13,347	7.4.51	1,892,119	1	1,892,119	422,781
	Victoria ...	4,744	Jan., 1951	1,990,981	31		

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1